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Mechanical Charging for a Foundry Cupola

More Uniform Mixing and Better Iron Are Secured—Hydraulic Core Remover Cuts Costs of Cleaning Castings

LOWER labor cost, uniform charging and better quality of iron have been secured by the Worthington Pump & Machinery Corporation, Snow-Holley Works, Buffalo, in the method of cupola charging now in use in the foundry at that plant. Formerly pig iron, scrap steel, etc., were placed on the charging floor by crane, and charged by hand from there. This, of course, required a considerable number of men to take care of the two cupolas. With the arrangement now in use three men can charge 100 to 150 tons per day as compared with 14 men formerly.

Charging buckets, some with a capacity of three tons, others of four tons, have accomplished the saving. On the ground is an electrically operated car on which one of the buckets is placed. It is moved past a series of bins from which are loaded into the bucket the proper proportions of pig iron and scrap until the car reaches the end of its runway, which is directly under an opening in the charging floor. Two men care for the work to this point. A crane, operating over the charging floor, drops its hook through the opening and lifts the loaded bucket through this trap door to a position before the charging doors.

Before delivering the charging bucket within the cupola, the crane operator attaches a pull chain to the dumping trigger. This trigger is mounted in a cross member, to which is also attached the ring or bail by which the crane hook lifts the bucket. The bucket is then lowered into the cupola and the chain operating the trigger is pulled, the action withdrawing latches, so that the two halves of the bucket swing down, dropping the load. The drop bottom has two leaves hinged on a center shaft parallel with the top cross member. By turning the cross member of each successive bucket 90 deg. from the position of that of the preceding bucket, the charge may be dropped in such a manner that the four quarters of the cupola diameter are evenly charged, instead of the entire charge being thrown, as in hand charging, against the far side of the cupola wall. By means of a bell crank lever arrangement on the bottom leaves, these are closed by simply lowering the bucket to rest on a floor

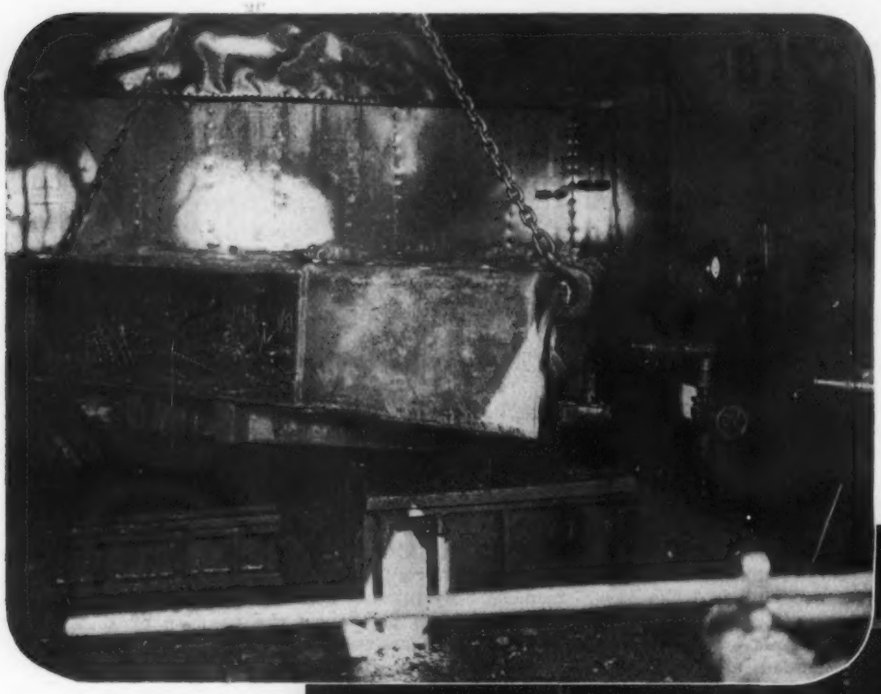
Drop Bottom Charging Buckets Permit Faster Charging of the Cupola, at the Same Time Making for Uniform and Better Iron

In the illustration the bucket is shown just after the charge has been dropped. It has been raised and is emerging from the charging doors. The flames had just started to break through this last charge when the photograph was taken. With this method of charging a better mix is obtained and consequently a more uniform quality of iron.

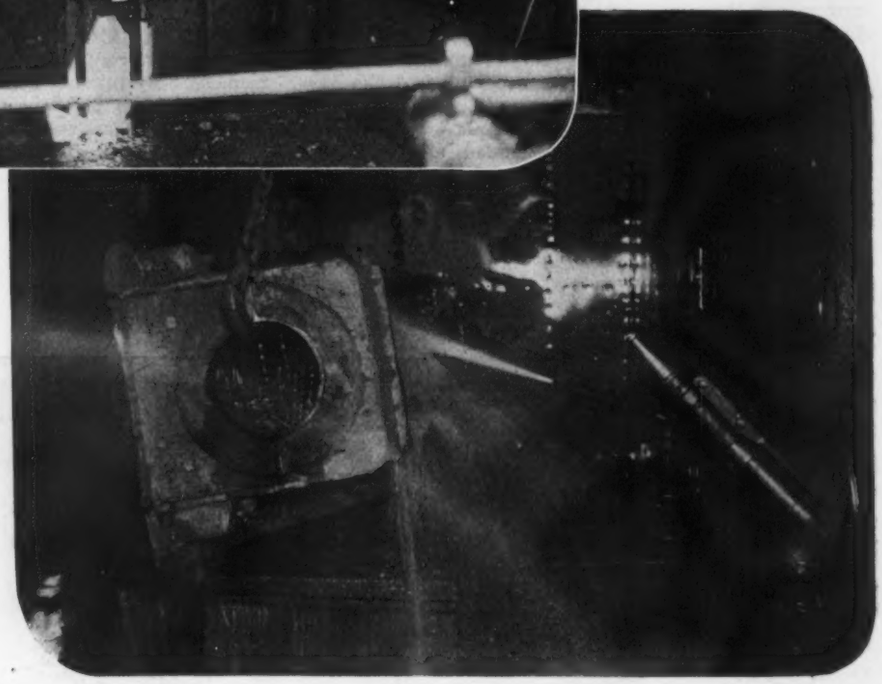
Another labor saving feature in the Buffalo plant is the hydraulic core removing equipment. The casting from which the core is to be removed is placed in an inclosure somewhat like a sand blast room, except that one side may be left open because there is no dust. Behind one of these walls the operator stands to control the nozzle in use. This nozzle is arranged with a monitor mounting and has a lever extending through a rubber apron to the operating room on the other side of the wall. The operator views the work through a porthole provided with bullet proof glass, as frequently pieces of the core, snaggers, etc., are washed against the glass with considerable force.

There are three of these nozzles around the cleaning room, any one of which may be used at will by individual valves for each, mounted in the supply line from the pump. All particles of the core are removed leaving clean casting walls. Core racks and what snaggers may remain inside the body of the casting are loose and readily dumped out by up-ending the casting. Some of the time savings effected are indicated by cleaning in an hour as against a day formerly, by 15 min. as against 4 hrs., by 2 hrs. as against 2 days, by 8 hrs. as against 10 days, under the old method of using bar and hammer. Further there is no dust in this method of core cleaning. From the standpoint of labor for core removal this method averages 1 as against 5 to 8, depending upon the type of casting.

Naturally the smaller castings cannot be cleaned in this manner, owing to the force of the water. A casting as large as 1200 lb. was washed from the cleaning table against the walls. The pressure used is 325 lb. and is developed by a reciprocating pump of the company's own make, with belted motor drive. Supply is drawn from an underground tank which is filled once a week, but to which the water used returns through screens and settling partitions from the cleaning room. This tank holds about 3600 gal.



The Tremendous Pressure of the Water Removes All Core Sand, Even That Baked to the Casting. Core frames and snaggers are easily shaken out when the cleaned casting is removed from the cleaning room



Water at 325 Lb. Pressure Has Effected Large Saving in Time Required to Remove Cores from Large Castings. Labor is reduced and dust eliminated

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Railroad car loadings were 1,015,704 in the week ended Nov. 15, the largest on record for so late in the year. For the year to date the total was 43,166,801 cars.

Economic Progress of the United States*

Review by Secretary Hoover of Business Conditions During the Year Ended June 30—Agriculture, Transportation and Foreign Trade

OUTSTANDING features of the fiscal year were: First, the advance in agricultural prices, which had hitherto lagged behind industry since the slump of 1920; second, the beginnings of sound policies in German reparations, leading to a hopeful measure of economic recovery in Europe; and third, the complete recovery of our own industry and commerce (aside from agriculture), great stability of prices, high production, full employment, expanding foreign trade and prosperity throughout the business world. There were some moderate decreases in activity of some lines during the latter part of the fiscal year, but since its close there has been general recovery again in those lines.

Agricultural Price Recovery

The situation of agricultural prices may be well indicated by comparing September prices with the general level of commodity prices. Based upon 1913 as 100, the wholesale price index of all commodities was 149. The corresponding price index of No. 1 northern wheat was 148; of cotton (New York), 191; corn, 186; and hogs, 118. From the low point since the beginning of 1921 these figures represent recoveries: for wheat, of 37 points; cotton, 99; corn, 111; and hogs, 37. Many readjustments are needed yet, but agriculture has turned an important corner and this change marks a vital step in the whole afterwar economic readjustment.

Table I.—Railroad Operations

	Year ended June 30			Per Cent Increase, 1923 to 1924
	1922	1923	1924	
Freight, ton mileage (millions)	351,536	431,035	436,737	1.3
Average weekly car loadings	789,000	907,000	942,000	3.8
Average daily car surplus	272,756	36,399	187,554	415.2
Average daily car shortage	2,410	74,689	4,793	(d)93.6
Bad-order cars:				
Average for year	339,369	241,218	170,546	(d)29.3
Number at end of year	324,583	190,411	194,869	2.3
Bad-order locomotives:				
Average for year	15,764	16,089	10,838	(d)32.6
Number at end of year	14,412	11,450	11,034	(d)3.6
Number of employees	1,643,000	1,770,000	1,850,000	4.5
Total operating revenues*	5,508,169	6,104,274	6,120,646	0.3
Net operating income*	818,345	873,777	924,674	5.8

*In thousands of dollars.
(d), decrease.

	Calendar Year		
Numbers	1921	1923	1923
Locomotives: Installed	1,330	1,379	4,037
Retired	1,130	1,682	3,746
In service end of year	64,949	64,512	64,896
Freight cars: Installed	63,406	77,221	197,875
Retired	69,245	126,472	200,000
In service end of year	2,344,787	2,322,286	2,376,373

Transportation

This fiscal year marks the first occasion since long before the war, when our railroad facilities have been completely equal to the demands of the country. There were no car shortages of any consequence. There was a speeding up of delivery of all goods. This complete reconstruction, expansion, and growing efficiency in transportation facilities marks a fine accomplishment on the part of our railroad management. Its economic effect is most far-reaching. Every car shortage is a strangulation in the movement of commodities which reduces price levels to the producer and increases them to the consumer. It disarranges the synchronizing of our industrial fabric and widens the margin all along the line between producer and consumer. There is still requirement for extension of terminals and readjustment of rates.

Making our transportation facilities adequate to our needs is one of the greatest contributions toward our economic stability. Table I shows the essential items of progress in transportation as compared with the two previous fiscal years.

Dawes Stabilization Plan

European stabilization, which the Dawes plan may be expected to achieve, will bring about a revival in world trade and increased consumption of commodities, in which the United States is bound to have its share. This trade revival and increased consumption power should outweigh any increased competitive power which might be expected from the execution of the plan. It is not too much to say that this settlement of the vexed reparation problem, coming at the time it did, prevented another European collapse, with its inevitable repercussion on world trade and on the business of the United States. The Dawes plan is the first effort to solve the reparations question purely on a commercial and economic basis.

Foreign Trade

In the fiscal year under review exports increased 9 per cent in value as compared with the preceding fiscal year, while imports decreased 6 per cent. The net result of these changes in opposite directions was an increase in the excess of exports over imports from $176,000,000 in 1922-23 to $757,000,000 in 1923-24. While in absolute amount this is a larger export balance than in any year prior to the war, the percentage by which exports exceed imports is somewhat smaller than in most pre-war years. The movement is shown in Table II.

Table II.—Foreign Trade of the United States
(In millions of dollars)

	Years Ended June 30—				Per Cent Increase, 1924 from—	
	1910-1914 Average)	1922	1923	1924	1910-1914	1923
Actual values:						
Exports, merchandise	2,166	3,771	3,957	4,311	99.1	9.0
Imports, merchandise	1,689	2,608	3,781	3,554	110.4	(d)6.0
Excess of exports:						
Merchandise	477	1,163	176	757	58.7	330.7
Gold and silver	38	*449	*244	*388	...	....
Merchandise, gold and silver combined	515	714	*68	369	...	....
Values at 1923 (calendar year) prices, eliminating effect of price changes (approximate):						
Exports, merchandise	3,729	4,139	3,955	4,271	14.5	8.0
Imports, merchandise	2,452	3,386	4,015	3,586	46.2	(d)10.7
Excess of exports	1,277	753	*60	685	...	....

*Excess of imports.
(d), decrease.

Our foreign-trade balance sheet is, however, not at all complete without the inclusion of "invisible exchange," but as these figures are compiled upon the calendar year they cannot well be included here.

The outstanding feature of our foreign trade in commodities is its strong, real growth since 1913. Our

*From the annual report of the Secretary of Commerce.

total imports and exports in that fiscal year amounted to $4,279,000,000 against $7,865,000,000 in 1923-24. If we correct this difference by the depreciated buying power of the dollar we still find an increase of 18.2 per cent. This compares with decreases of 12 per cent for the United Kingdom, 14 per cent for France and 51.4 per cent for Germany (in each case based on the calendar year 1923 in comparison with 1913, and with corrections for currency depreciation).

The gain in our total trade over the fiscal year 1913 is largely accounted for by the marked increases in our trade with Asia, Oceania, and South America. The value of trade with Asia increased 244 per cent and that with Oceania and South America 192 and 95 per cent respectively. Although the actual value of trade with Europe is greater than prior to the war, the gain is less than the increase in prices and the actual quantity of goods is smaller. This decline in the relative importance of Europe as a factor in our trade as other areas gain is in part a continuation of a gradual shift in this direction evident before the war and in part the result of the war's serious impairment of European commercial strength.

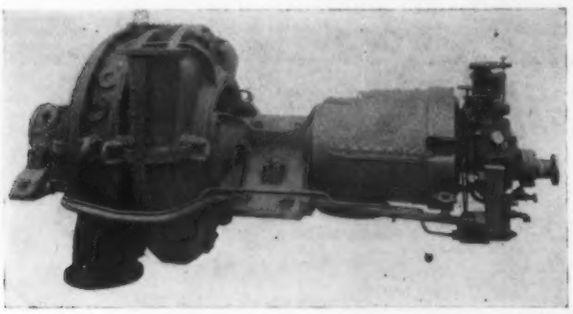
The unique situation of our foreign trade is to a considerable degree due to the support given by Congress and the administration to the activities of this department. The reorganization of this service for practical trade promotive purposes is well indicated by the growth of applications by business houses and farm cooperatives for assistance by the department. In 1921 these inquiries averaged less than 700 daily, whereas they now exceed 7500 daily and are heavily overtaxing the facilities of the organization. A recent query to export houses requesting estimates of their foreign transactions in which they were materially assisted by this department, either in sales promotion or in the prevention of losses, brought responses indicating a total exceeding $500,000,000.

New Line of Multi-Stage Compressors

High efficiencies, simple and strong construction and the minimizing of mechanical difficulties are claimed for the line of multi-stage centrifugal compressors recently placed on the market by the General Electric Co., Schenectady. The applications include blowing of blast furnaces, Bessemer converters, gas boosters, gas exhausters and in pneumatic material handling systems.

The line of compressors includes water-cooled machines designed to deliver from 300 to 60,000 cu. ft. per min. at pressures up to 30 lb. or more. The line includes also two types of miniature, self-cooled machines designed to deliver volumes of 250 to 1400 cu. ft. per min. at pressures from 2 to 6 lb. All machines may be equipped with either motor or turbine drive. The unit illustrated is a three-stage machine rated at 8500 cu. ft., 16 lb., and is driven by a D-51 Curtis steam turbine.

Large cooling capacity is a feature, the conversion passages having been improved and the interstage passages simplified. Each complete unit has four bearings with an automatically lubricated flexible coupling. The bearings are supported by a foundation or base under the machine. The various governing devices for the machines have been improved, including constant volume, constant suction and constant pressure governors.



Multi-stage Centrifugal Compressor. Machines to deliver from 3000 to 60,000 cu. ft. are available, as well as two for volumes from 250 to 1400 cu. ft.

The multi-stage units are intended to supplement the line of single-stage compressors recently developed by the company. Installations of the new machines, which have been built singly for some time, include two 43,000 cu. ft., 25-lb. pressure units at the Mystic Iron Co., Boston.

The Collins Mfg. Co., Lewistown, Pa., is running full at its local plant, with production on a basis of about 1300 doz. axes per week. The plant will maintain on a capacity schedule indefinitely. The company recently succeeded to the plant and business of the Mann Axe & Tool Co., Mann's Narrows, Pa.

Strongest Welded Rail Joint Sought

In a small house in the woods, where the noise of the test will be least disturbing, the Bureau of Standards is seeking to determine which type of welded rail joint will last the longest under the impact of street car traffic. Specimens of every type in common use are being subjected to very rough treatment in order to determine their relative durability.

The specimen under test consists of two short lengths of rail fastened together with a joint of the type to be studied. This specimen is mounted on two supports which in turn rest upon a heavy spring supported anvil. A power hammer weighing 400 lb. strikes a blow on the joint once a second, being driven by an electric motor and cam shaft. The succession of heavy blows on the joint produces an effect similar to that from the wheels of cars running along the track and the number of blows required to break the joint indicates its relative strength. The test is a noisy one, even worse than the noise due to flat-wheeled cars or cupped rails.

This test, which forms a part of a thorough investigation of rail joints, is being carried out in cooperation with the welded rail commission of the American Bureau of Welding and the American Electric Railway Association. Four common types of welded joints are being investigated: The fish plate weld, in which the ends of the rails and a pair of fish plates attached to their sides are welded together with an electric arc; the thermit weld; the butt weld, and the cast iron weld. Of these four, the fish plate weld is most used. The butt weld can be used only in new track, as it requires the ends of the rails to be pressed together and melted with an electric current. The thermit weld is used to a certain extent and consists in pouring molten metal into the joint, the steel being melted by the thermit process.

Crucible Steel Co. Shows Gain in Orders

Chairman H. S. Wilkinson of the Crucible Steel Co. of America, addressing stockholders at the recent annual meeting, stated that October orders had increased 22 per cent over September, and November business to date had gained correspondingly over October. He added:

"Volume of business is steadily increasing and we are of the opinion that it will continue to do so until we have normal business. Stocks are very low in the hands of our customers, perhaps the lowest they have been in ten years. The policy of buying from day to day is still encouraged by a majority of customers, but for the first time some of our large customers are seeking contracts for their requirements three to six months ahead.

"We look forward to the most satisfactory and stable business that the steel companies have had since 1920. Crucible Steel is in excellent shape financially. It has made large improvements in its plants and increases in its facilities for taking care of raw products."

Control of Stock in Warehouse

Efficient Records Save Customers—Perpetual Inventory Maintained, with Frequent Checks and Annual Stock Taking

BY DUNCAN G. MAC INNES*

STOCK assets are as important as cash. Currency and book debts are protected carefully; but stock, upon which depends the life of the industry—whether it will continue operation or have goods to sell, or keep and build trade, and which is the chief artery of the business—is too often left to itself. It is necessary, then, that this source of business life be protected by an efficient stock-keeping system.

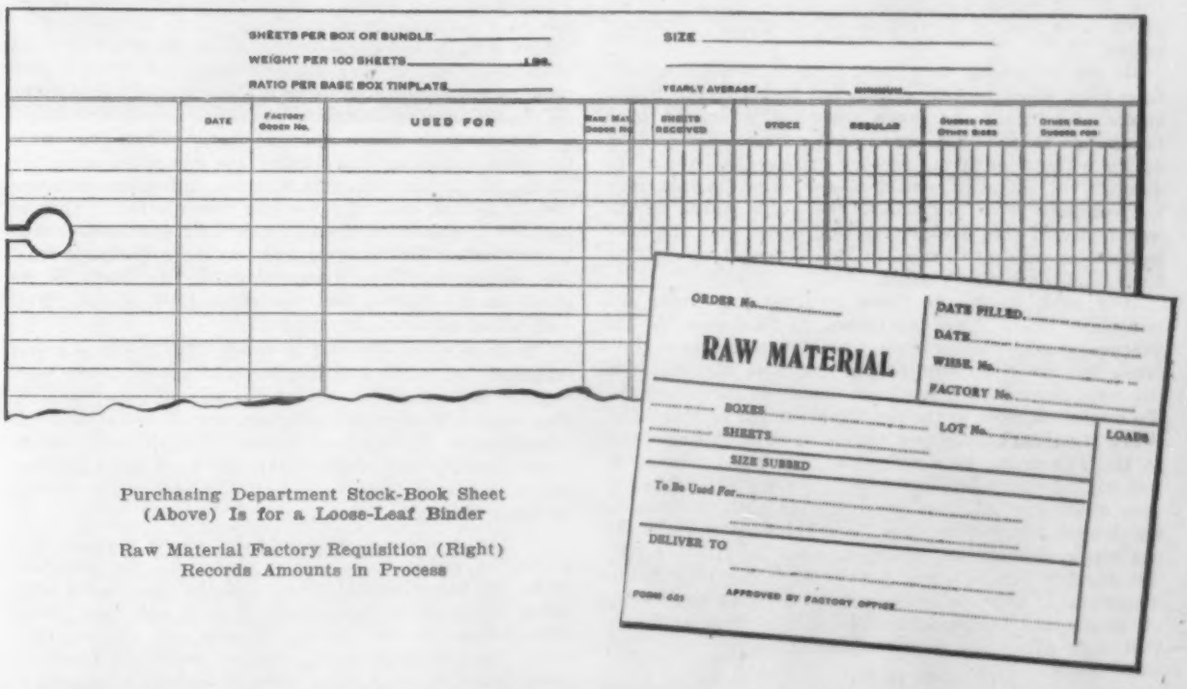
Who can foretell the coming of a serious fire, or financial stringency which will make necessary the raising of more capital immediately? But the effects of such calamities can be avoided with good stock records. Fire insurance companies have much more sympathy with fire losers who can produce from their vaults records that show their stock up to date. Likewise, the banks will loan money more readily if they are shown records that are efficient. They have more assurance that their money, when it is invested in materials, will have protection.

The story is told about two business men who, along with a number of others, suffered fire losses. They, however, were the only ones who commenced to rebuild a few days after the fire. Upon investigation, it was found that when the fire threatened their property they had gone to their plants and taken away the permanent inventory records, which were kept in small filing cabinets, and were easily carried out. When they produced these, the insurance agents settled their claims much more readily than those of the firms which could show no stock records.

It is strange why a dollar, when invested in stock, should have less value to some people than the actual cash. No business man would consider leaving the cash drawer or safe unlocked; yet, in some firms, that is what is done in the stock departments. It is just as serious not to have complete stock accounts as it is not to have recorded cash transactions.

When a salesman accepts an order for delivery he really gives a promissory note that delivery will be made in the time specified. It may be that the customer is completely out of the article ordered, and every day means a loss of trade. If the manufacturer disappoints him, he must inconvenience his customers in turn. That often ends in the dealer going to another manufacturer with his order.

There is no greater need for an efficient record in a manufacturing plant than in the raw material warehouse. Upon this stock depends to a large extent the success and future of the business. The firm suffers both from overstocking and from shortage of materials. In the first case capital is tied up needlessly, and in the second men and machines are idle, goods are not being sold and overhead expenses are climbing up. The need of this record is particularly great to the firm that must procure its raw materials from a distant mill, or must have them made up to specification. It is not like a retail business that can obtain supplies from stock in a few hours or days.



Purchasing Department Stock-Book Sheet (Above) Is for a Loose-Leaf Binder

Raw Material Factory Requisition (Right) Records Amounts in Process

There are many systems in use, but few are as simple and as efficient as that which a large Canadian firm using sheet metals evolved after other systems had failed. Trouble was continually cropping up in the raw-material department. Sizes of material were being depleted without reordering; books and actual stocks did not agree, and there were many other errors. As the raw materials had to be obtained from some distance, and took weeks to obtain, this firm was often seriously inconvenienced.

Now the actual records are kept in two sets of books, one kept in the raw-material warehouse and the other in the purchasing department. Loose-leaf binders are used, but card indexes could be used just as efficiently. The two sets of records are alike, with the exception that the ones in the purchasing department show the use to which each withdrawal of stock

*34 Metcalfe Street, Toronto, Canada.

has been put. The other set is entirely a stock record. The totals of these books must compare at all times. If they are found to differ, the physical stock is taken and the difference located.

The origin of the requisitions for raw material is in the finished goods warehouse. When a certain article is seen to be getting down to minimum, the factory office is informed immediately. There is made out the factory instructions, and a requisition in duplicate for the material. This order then is taken to the purchasing department stockkeeper. He consults his records and, if there is sufficient in stock, initials it and keeps the duplicate copy. The original is sent to the raw-material warehouse. When he authorizes an order to be filled he consults not only the stock records but the duplicates of other orders that have been passed but not yet taken from stock. This obviates all danger of passing more orders than there is material in stock.

When the material is taken to the factory, the exact quantity is noted on the requisition by the order clerk. This slip is then given to the stockkeeper in the warehouse, who marks it off his books, and makes a notation on the order of the balance of that size showing in his records. Each night these requisitions are sent to the purchasing department stockkeeper. He removes the duplicates from his file and destroys them, and then deducts on his books the quantities of material used. If the balance is not the same as that of the warehouse books, the actual stock is taken, or the two books compared to see where the difference occurs.

It can be readily seen how, if these books are carefully kept, stock records cannot but be accurate. Under special conditions—as when material is needed in a hurry, and there is not time to get a requisition passed, or when the men in the factory are careless about the quantity of material obtained—the actual stocks may not compare with the books. The order clerks in the warehouse of this firm are so impressed with the need to have an accurate record of raw material stocks that such conditions rarely arise.

For each stock size there is a set maximum and minimum limit. The maximum, in this case, is the average yearly consumption, and the minimum is governed by the time required to get new material. If the time limit during the busy season is three months, the minimum stock is the requirements for four months. When the stockkeeper sees that a stock is getting down to the minimum, he notifies the purchasing agent in writing. As an additional check, a report is made out once a week of all the stock that is getting down to the lowest amount required. On this report is shown the stock, amount on order, amount requisitioned by the factory but not yet drawn, and the use of the material. If there is an overstock, through the falling off in demand for certain articles, this is reported, so that some other size may be substituted.

Aids in Buying

These aids make buying a simple and a sure proposition. The purchasing agent has the assurance that, unless there is an unprecedented falling off or additional consumption of the stock sizes, he is not making a mistake in buying the usual quantity. When the order is placed, a copy of it is given to the stockkeeper, who enters it in an order book similar to the stock books, having a page for each size of material. Then the copy of the order is held by him until it is acknowledged by the mill. The date of delivery promised or specified is entered with the order number and name of the mill in a diary, under the date that delivery should be made. If on that day the material is not in transit, he writes or telegraphs to the mill to urge delivery.

When the shipping notice and invoices are received a copy of the bill of lading is given to the traffic department in order to trace the shipment, and the sizes in transit are marked off the order book.

When a shipment is received it is checked carefully in the receiving warehouse with the shipping record, and then posted into the stock books. Each day a record of all goods received is sent to the purchasing department order clerk who, in turn, posts the new stock into his books, marks it off the order books as being received, and checks it with the invoices. This serves to keep the stock books daily up to date, and keeps a close check on goods received with those paid for.

Unless there is unusual activity in some departments of the factory, or the shippers fall down badly, there are no out-of-stock reports. But when this does happen a note is taken of the size, the mill is telegraphed to rush delivery, and the orders from the factory for that size are held in the factory office. Once a week this office makes out a report of orders that are being held for stock and sends it to the purchasing agent. It serves as a weekly reminder. Of course, it does not mean that the manufactured article is out of stock, because a similar system is maintained in the finished goods department. They have enough goods on hand to fill orders for a certain length of time.

Following Up on Orders

The follow-up system on order is worthy of note. If, when ordering, a delivery date is specified, it is not let go at that. The stock clerk must see that the order is shipped on that day, or know the reason why it is not. For this purpose he has several form letters. One is used when the order is not acknowledged immediately, and others when the order is not shipped on the date given. These letters are sent at close intervals until delivery is made. The system of entering promises in a daily diary keeps the situation of every order before him from day to day as, when an order has not been delivered on the day specified, he writes, and then enters it up three or four days ahead. This gives no chance of forgetting.

Inventory is taken once a year. When the stock has been estimated the figures are compared with the books, but unless there is a great difference between the totals the book figures are not altered. This is because it has been found from past experience that in most cases the book figures are more accurate than the estimates. The inventory clerk has little or no check on his figures, but the stock book clerks check each other up from day to day.

To keep the executives in touch with the stocks and materials on order, a report is made out from the purchasing department books at the end of every month. This report shows the stock, amount on order, and the consumption for the past month of each size. From other monthly and annual totals the busy executive can see at a glance how the situation compares with that of other months.

A few years ago this firm began to manufacture a line of goods from a new material. As this was under the experimental stage, and the stock sizes were being changed so frequently, it was not kept under this system for two years. It was not put too soon under the system as used for other materials, for there were found in stock some sizes of materials enough to last for seven and eight months, when it took only three weeks to get the stock from the mills. The factory was continually running out of other material, and valuable orders were being lost because they could not be filled in the time specified. It was not so much a matter of bad buying as it was of inefficient stock records. When placed under the system this particular stock was soon as efficiently taken care of as the other raw materials. With very little trouble to the stock keeper, less in fact, there is less tie-up of capital, and the factory is never stuck for stock.

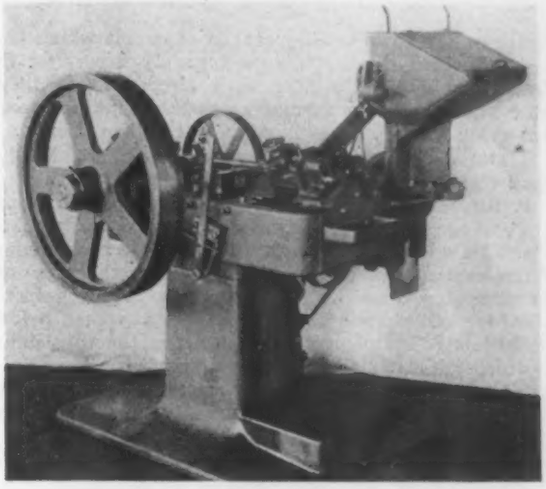
Any change of the stock-keeping system may appear to be a big job, but it is a change that is well worth while when it is going to mean better business and larger profits.

An attractive illustrated poster is being distributed by the Department of the Interior, Washington. It depicts the principal activities of the department through it various bureaus and other offices. There are 14 items represented in the poster, each with a half-tone and some information regarding the particular activity represented.

Pinch Pointing Machine May Operate Automatically

Conical points on wood screw and drive screw blanks, and "pyramid" points on escutcheon pins and wire nails, are produced by the machine shown in the accompanying illustration, which has been placed on the market by the Waterbury Farrel Foundry & Machine Co., Waterbury, Conn.

The machine is provided with a hopper feed and



Screw Blanks, Pins and Wire Nails Are Pointed Automatically

chute, as shown, which delivers the headed blanks into a notched dial in an index head. The chute and index head are adjustable to permit blanks up to 2½ in. long under the head to be pointed. The maximum capacity for diameter is ¼ in.

The index head is located at the same angle as the feed chute so that the blanks pass directly to the dial, a construction which is stressed as simplifying the operation. As soon as the dial has indexed 90 deg. and has brought the blank into line with the dies, the die in the gate advances, partly displaces the blank from the dial, and pinches its end against the stationary die attached to the bed. Means are provided for preventing the blanks from tipping in the dial and for assuring that the points will be symmetrical and of uniform length. As soon as a blank has been pointed it is pushed back into the dial by a spring-actuated slide; then the dial continues to index and carry the blank around until it gravitates from the dial.

The dial is indexed by a ratchet and pawl mechanism in the index head, actuated by the gate, and a locking device is provided in the index head to prevent the dial from moving during the pointing operation. The connection between the gate and index head consists of a spring which acts as a solid connection on the forward stroke of the gate and yields on the backward or indexing stroke should a blank become lodged improperly in the dial. The blank is released on the next movement of the gate, thus correcting the trouble automatically.

The dies are rectangular pieces of hardened steel formed to pinch the wire and fastened in steel die-holders by clamp screws. The dies, which project from the holders, are made to a standard length so that for different diameters of wire it is necessary to change the dies. Four bumpers extending from the face of the die-holders are intended to prevent the dies from chipping when the moving die is in its maximum forward position. The moving die-holder is equipped with two guide pins which are alined with holes in the stationary die-holder to facilitate matching the dies when setting up.

A 2 hp. motor is employed to drive the machine, which operates at the rate of 100 to 160 strokes per min., depending on the size of the point. The weight of the machine is 1375 lb.

Work-Handling Device Feature of Centering Machine

A new work-handling device, which is operated by a foot treadle and is claimed greatly to facilitate operation of the machine, is a feature of the improved design of the duplex hand-centering machine of the Pratt & Whitney Co., Hartford.

The work-handling mechanism controlled by the foot treadle permits of operating the drills with one hand and of loading and unloading the work with the other hand. The possible output of the machine is thereby increased and the work of the operator lightened.

The new work-holding device is made up of two work slides carrying an adjustable V-block and a movable jaw, the latter being actuated by the foot treadle, so that the work is held by a V and a flat which holds it immovable. A micrometer dial is provided on the front of each work slide, one turn of which changes the adjustment for diameter of work ⅛ in. by moving the V-block. A compensating device on the slide provides for a variation of 1/16 in. either way from the nominal size of the work being centered. Five sets of jaws for work ranging from ¼ to 1¼ in. in diameter are available, each set providing for two diameters. A spring plunger is arranged to return the work slide to its starting position when pressure on the foot treadle is released. The work is loaded in the machine by hand and held in place by the foot treadle.

The bed and heads of the machine are the same as in the previous model, which was described at length in THE IRON AGE of Nov. 16, 1922. Each head has its own built-in motor and two-speed gear box. The heads are arranged so that a single lever feeds both drills at once and the work is centered at each end simultaneously. Stops permit of setting the machine either to make the same size hole in each end, or to center to exact length between holes, as desired. The

Duplex Hand Centering Machine. A new work-holding device operated by foot treadle is intended to facilitate operation

control lever is connected to a plunger pump so that cutting fluid is supplied to each drill each time it is fed into the work. The motors are controlled by a single snap switch. The machine is designed for work from 2½ to 18 in. in length. The floor space occupied is 2½ x 4½ ft.

Plans have been filed for the erection of a concrete and steel building to be used as a core department of its plant at No. 1 Austin Street, Buffalo, by the American Radiator Co.

Hardness Numbers and Their Relation

Absence of a Real Basis for Comparison—Structure of Metals—Ideal Physical State—True Hardness

BY DR. H. P. HOLLNAGEL*

THE question has often been asked, "Why are hardness numbers such as those determined by the sclerescope and Brinell machines not readily transferable to one another?" The predominant reason for this apparent impossibility is the lack of a real basis of comparison, there being no real unit of hardness. If we say "Hardness is the cohesive resistance to deformation," this has different physical meanings for the perfect and imperfect solid states. As the latter term is one we are continually interpreting in our daily labors, the former will here be understood as follows: The nearest approach to a perfect solid consists in a crystalline structure in which the mass is made up of atoms spaced with geometric regularity.

The Ideal Physical State

An ideal mass of the sort mentioned in the preceding paragraph could be said to have perfect elasticity. This would require that its atomic displacements obey Hooke's law, that is, they would be proportional to the stress causing them; and the ratio of stress to strain produced would be constant for all values of the stress. There would be no limit beyond which permanent deformation would appear, nor would the material definitely rupture. Atoms would return to their original position, due to the energy stored in the material as a result of displacement. There would be no loss of energy on return because of interfering atoms or molecules and no heat of dissipation within the material because of no internal friction.

A body, therefore, perfectly elastic could not be permanently deformed as it is probable that no deformation of such body could take place without a change of the shape of the body. It is also conceivable that a body of perfect rigidity would have the highest degree of hardness and that materials of less rigidity would have hardnesses to varying extents. This latter condition is that which is of greater interest and will be examined in greater detail.

Metals in Practice

There are in nature no materials of perfect elasticity and most substances exhibit this property under stress only throughout a very limited range. Because of this, materials are compressible but not perfectly so; if they were, their volumes could be diminished indefinitely. If metals are crystalline throughout they may be, as will be observed later, made up of atoms regularly laid down or they consist of grains which are pieces of such crystals disposed purely according to chance distribution. Under such circumstances they are compressible only insofar as their atomic and random grain structures permit of slight deformation.

Materials, which under stress suffer infinitesimally small displacements before rupture occurs, are said to be brittle. The proportionality limit (a), the yield point (b), and the ultimate strength (c), all practically coincide. These exist because of the imperfect character of the elasticity. As is well known, (a) is the value of the stress beyond which the strain is no longer proportional to the deforming stress; (b) is that stress, below the ultimate limit and above the proportionality limit at which the material suffers maximum permanent deformation per unit stress; (c) is that stress at which the material, having previously markedly and definitely changed its geometrical dimensions permanently, ruptures (brittle materials excepted). In the change of form of such material, that property which features its flow or deformation under tension along one dimension is known as ductility while that which characterizes its flow in all directions under stress without appreciable development of strain, is termed plasticity.

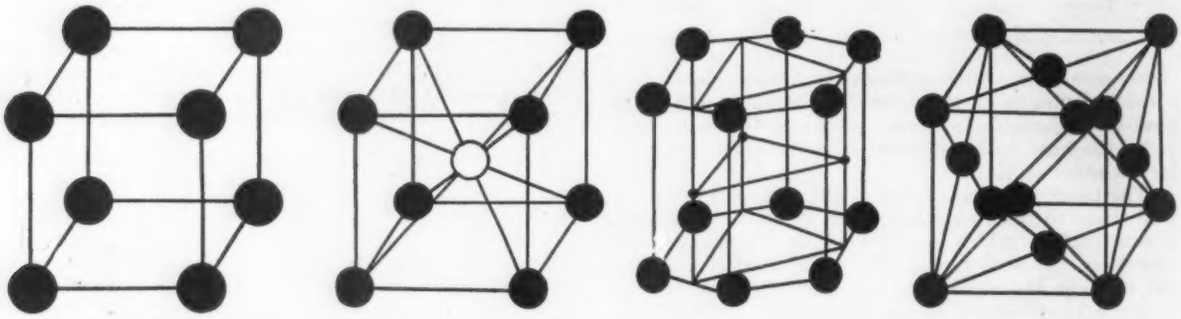


Fig. 1.—A Schematic Representation of the Pure Crystalline State of Metals. The various possible crystals range from a to d, left to right

A perfectly rigid body would be characterized by impenetrability. As there are none such, most materials are penetrable to some degree, which is in part due to their plastic property. If such materials are subjected to impulse forces, they may or may not be deformed permanently, depending upon the magnitude of the applied impact, the hydrostatic containing effect of the material impacted and the duration of impact.

In a metal which has been locally deformed, the surrounding material backs up that portion which is strained. At the stabile value of the static load the force acting upon the material is equalized by the reaction of the local and surrounding metal. This may be designated, if you choose, as the hydrostatic containing effect of the metal. For example: Cast iron being very brittle would, if in small pieces, rupture readily under localized stress; if sustained by larger masses the local stresses could be much higher.

The factors referred to are determinable by the resilience of the material. The energy of impact less the energy of deformation is a measure of the resilience, that is, the work done in causing the impacting body to rebound, (neglecting internal losses). The material may, by recurrent action of impulse stresses, be caused to change its volume and form to that of a thin

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sheet, in which case the material is not only plastic but malleable.

Structure of Metals

From X-ray analysis it has been possible to establish that the atoms of metals are systematically laid down at the apices of polyhedrons as well as in definite positions relative to them.[1] Any metal in the pure crystalline state may be pictured as being constructed of "building blocks" such as are represented schematically in Fig. 1. These units may be either cubes or hexahedrons. If an atom is located in the geometrical center of the cube as in (a), it is designated as "body centered" if disposed in the center of each face as in (d), it is "faced centered." The hexagonal prism indicated shows a triangular prism with atoms regularly distributed midway along the three elements and is referred to as a "close packed" hexagonal type. A molecular structure would appear as in Fig. 2 which may be considered as a portion of the structure representing a lead ore (lead sulphide or galena). Here the black and white spheres are indicative of the lead and sulphur atoms.

A mass of pure metal, if disposed in a manner to give it maximum strength, would probably be a crystalline mass laid down with the above regularity. The planes in which the atoms are most densely packed probably manifest the maximum strength and presumably the greatest resistance to deformation.[2] The grains usually referred to in most discussions concerning metals are of this character. They are disposed, however, in a variety of orientations with respect to one another because of the lack of control over the crystal growth. It is impossible from the present state of our knowledge to control the growth of large crystalline masses; consequently there arises interferences between units and the distribution of atomic and structural forces becomes very complicated.

If such material is broken up into exceedingly fine material, the crystals may become of such magnitude as to be just visible with the high-power microscope; others still smaller will be visible only by means of an ultra microscope. The larger type probably lie in a matrix of the smaller kind which undoubtedly forms from metal which at one time was locally fused. Because of the surface tension, this has assumed the tough state known as amorphous metal. Metals which have been plastically deformed always exhibit this state to some degree.

A theory of hardness by slip interference of metals[3] has attracted considerable attention in recent times and offers a satisfactory picture of the manner in which such deformation may take place. In accordance with a structure indicated in Fig. 1 successive layers of atoms may be had as a result of the successive addition of cube after cube of this material (called a space lattice). Such layers of atoms may be likened to a stack of playing cards which may glide one upon the other. Planes in which the larger population of atoms lie and which glide upon one another under stress are termed slip planes. When considerable pressure is exerted upon a crystal in a system of mixed interdisposed crystals, the crystals give along slip planes until minute portions become "keyed" in the region between them. Keying of crystals may be likened to the wedging action of abrasive particles between surfaces in motion with respect to one another. In this manner slip planes ultimately become fixed and the material hardens more and more as a result of cold work.

True Hardness

The true hardness of the most perfect type of crystalline material would be considered to be the pressure necessary to displace an atom from its position in the lattice (at a particular temperature). Since the force with which an atom is repelled by its neighbors is the true force of restitution and resistance, there exists a certain depth beyond which deformation will cease to occur because of the difficulty of penetration of one atom into another. Beyond this point rupture takes place by atoms shearing past each other under which condition true hardness has no significance.

Displacement of individual atoms cannot, however, de dealt with. The hardness for a crystal is therefore determined over a small area and has an average value because of the varied degree of interpenetration of the atoms resulting from the stress distribution on this area. For this reason physically at least the Moh scale of hardness has significance and as such is relatively satisfactory. It is a mineralogical scale based upon one crystal scratching another in which diamond (10), corundum (9), topaz (8), quartz (7) . . . talc (1), are given in the order of their respective hardnesses.

The numbers assigned to these materials have no physical dimensions and therefore no physical significance. Furthermore, "Diamond cuts diamond" which indicates the indefiniteness of the scale. In other words, the interference of one crystal lattice with another even though of the same system may cause such a degree

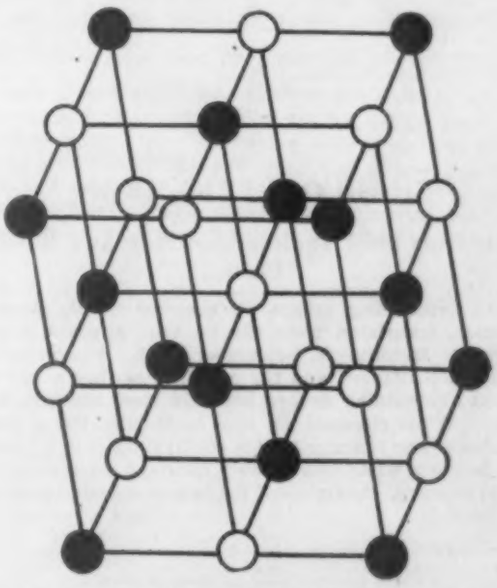

Fig. 2.—A Molecular Structure Considered as a Portion of That Representing Lead Ore

of hardness that one crystal may scratch the other. This may be due to a so-called "grainy boundary" of two crystals which is not at all a regular geometrical configuration, but one in which, due to interference, there is an increased density of atoms in addition to irregularity of disposition.

In dealing with the hardness of atoms one is concerned with the distance, d, between them, the so-called lattice constant. If with an average taken over a large number of atoms, as in the case of a hardness measured by pressure, a distance which is an average taken over a variety of depths must be characteristic. This is because the very large number of atoms concerned in such a measurement are not at all displaceable to the same depth; stress is rarely applied with entire uniformity because of the imperfect flatness of the surfaces.

Constitution of Metals

Metals, as we know them, consist of crystals of all sizes and shapes. Each unit is in itself of the character indicated in Fig. 1 and the crystalline aggregates are composed of numbers of such units forming independent crystals which may or may not interfere. They have all possible orientations and are probably surrounded by amorphous material which acts more or less as a cement to them. The random distribution of crystalline aggregates is characteristic of engineering materials. They are neither pure, nor regularly crystalline, generally speaking, and it is only an average consideration of hardness which can have significance.

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[1] X-Ray and Crystal Structure, by W. H. Bragg.

[2] X-Ray Crystal Analysis A.S.S.T., Sept., 1924, by W. P. Davey.

[3] "Slip Interference Theory of Metals," *Chemical and Metallurgical Engineering*, 1922, Jeffries and Archer.

Hardness conclusions cannot be arrived at from physical density determinations; even though the number of atoms per centimeter cube is greater one may expect them to interpenetrate to a greater degree because of the complexity of structure.

Compare the densities of tungsten, copper and lead which are here given in the order of their hardnesses:

	Density
(1) Tungsten	19.1
(2) Copper	8.9
(3) Lead	11.3

It is evident that there is no conformity with density, the same may be said of the atomic number and weight. There must therefore be something more fundamental than the above mentioned physical properties and it is quite reasonable to assume that it is the structure of the atom itself.

The significance of a true hardness then is but theoretical because of our inability to produce continuous space lattices in metals and to deal with the atoms as such. It might be possible to arrive at theoretical considerations which would be of value practically. This would entail discussion of a chance space distribution of the aggregates, their orientations, as well as the resulting fields of force. Evidence along this line seems to be at hand from the fact that introducing a stranger atom[4] into a space lattice of a metal like aluminum often causes a change in the hardness of the material. It appears that there has been a marked change in the lattice constant, d, as a result. This seems to indicate that spacing of the individual atoms is very important and that, after all, it is the resultant change of the field of force within the lattice that is effective and fundamental in hardness.

It is to be expected that, in a crystal built up in the regular manner by "building blocks," there will be different degrees of hardness in different directions. Czochralski has shown[5] that in a crystal in the direction in which the strength (festigkeit) is the greatest, the hardness may often be less (as measured by an indentation test) indicating that in the case of steels the hardness is not always proportional to the tensile strength. In cases where this has been found to be true it probably does not hold over the entire range of hardnesses. Moreover, for a given determination of hardness the numbers vary the more, the less the depth of indentation because of the greater intensity of the directed field of force caused for a less depth than for a greater one.

(*To be concluded*)

[4] Hardness and Hardening, W. Rosenhain, *Chemical and Metallurgical Engineering*, 1923.

[5] Czochralski, Verein Deutscher Ingenieure, June 2, 1923.

CHARCOAL PIG IRON

Made from Steel Turnings and Slags at a Russian Plant

An interesting article on charcoal blast furnace practice, translated from the Russian, appears in the *Revue de Metallurgie*, September, 1923. The writer is Prof. A. S. Pavloff and the article describes a run on charges containing no ore but only steel turnings and slags. While charcoal pig iron constitutes but a small portion of our tonnage in this country yet it is interesting to know what results were obtained from such unusual charges. Analyses of the raw materials are given in Table 1.

Table 1.—Analyses of Raw Materials

	SiO_2	Al_2O_3	CaO	MgO	Fe	Mn	P	S
Turnings	10.87	...	...	...	87.21	0.96	0.055	0.05
Puddling furnace slag	26.07	2.52	1.67	0.30	55.70	0.69	0.38	0.02
Reheating furnace slag	22.00	1.67	0.92	0.21	56.52	0.68	0.054	0.02
Scrap	3.17	...	0.11	...	72.65	0.61	0.07	0.02
Vixa ore (natural)	4.84	1.86	24.77	12.94	14.58	0.62	0.17	...
Yermine ore (natural)	21.40	5.82	13.49	8.88	15.98	0.46	0.35	0.15
Koulebaky ore (calcined)	32.76	6.32	2.10	3.10	27.54	0.79	0.15	0.05
Limestone	0.42	0.27	55.23	0.18	...	...	...	...

Turnings and reheating furnace cinder were the materials chiefly used, up to 95 per cent of the weight of the charge, not counting the limestone. The proportions varied from 80:20 to 34:56 of turnings to slag. Some ore was occasionally used to give more slag volume. Table 2 gives details of the burden extracted from the daily records of the last four years of the furnace which is at Koulebaky.

Table 2.—Charges in Kilograms

Charcoal	Turnings	Slags	Scrap	Ore	Total	Stone	Charges in 24 Hr.
405	295	312	65	..	672	98	65
404	443	262	65	..	770	65	65
413	492	197	98	..	787	65	76
375	656	197	65	..	918	65	70
424	787	230	..	..	1,017	65	73
417	705	197	..	49	951	65	58
419	738	164	82	49	1,033	65	65
412	246	426	65	..	737	73	69
418	213	574	..	..	787	82	70
444	1,214	344	33	49	1,640	49	50
406	180	410	33	82	705	98	72
418	262	541	49	98	950	98	58

A table is given in the original paper showing the daily output of the furnace for the first nine months of 1916, for ten months of 1917 and the succeeding seven months of 1918. This output varies greatly depending on the amount of turnings in the charge from about 30 to 70 tons. A study of the records showed that, by the use of turnings, double the tonnage of pig iron was obtained with the same fuel consumption. The blast was held steady at 700 deg. C.

Finally Table 3 gives an idea of the kind of pig iron obtained and of the slags produced.

Table 3.—Charges, Pig Iron and Slags

	1	2	3	4	5	6	7	8	9	10	11
Burden:											
Turnings	82	65	73	72	71	70	74	21	24	28	28
Slags	18	26	20	22	18	21	21	55	76	57	56
Scrap	..	9	7	6	3	2	2	5	..	5	5
Ore	..	..	..	..	8	7	3	19	..	10	11
Pig Iron:											
Si	1.36	1.25	0.94	1.39	1.26	1.28	1.09	2.53	3.23	2.57	2.21
Mn	0.72	0.54	0.42	0.43	0.64	0.68	0.71	0.42	0.43	0.50	0.43
P	0.16	0.09	0.12	0.21	0.17	0.14	0.15	0.33	0.35	0.34	0.34
Slags:											
SiO_2	49.10	57.92	60.18	65.65	56.15	57.85	58.80	60.84	59.06	62.32	60.77
Al_2O_3	4.47	4.98	6.77	5.28	7.38	7.53	7.29	7.86	7.04	8.40	6.25
FeO	0.69	0.96	1.66	2.85	....	0.69	1.21	6.43	0.86	6.15	5.11
MnO	1.87	3.02	3.53	2.32	1.82	1.44	3.01	1.75	0.50	2.19	1.99
CaO	40.34	29.57	25.51	22.17	n.d.	21.84	22.14	18.36	30.51	14.30	22.70
MgO	2.59	2.52	1.80	1.81	n.d.	10.11	6.74	4.24	0.50	6.69	4.06
$SiO_2 + Al_2O_3 : RO$	1.15	1.74	2.06	2.43	....	1.92	1.94	2.23	2.04	2.41	2.00
$RO : SiO_2$	0.94	0.62	0.54	0.44	....	0.59	0.61	0.50	0.55	0.47	0.56

G. B. W.

Development of Gas and Oil Turbines–II*

Test Data Showing the Efficiencies Obtained—Estimated Capital and Operation Costs—Study of Charted Efficiency Curves

TEST of a 700-kw. gas turbine, direct connected to an a. c. electric generator, and using coke-oven gas of 390 B.t.u. per cu. ft., was made last year. Gas was fed into the turbine at a pressure of 53 lb. per sq. in. absolute and a temperature of 99 deg. Fahr. Compressed air at an absolute pressure of 51.48 lb. and temperature of 95 deg., and scavenger air at 17.63 lb. absolute and 81 deg., were used. The maximum explosion pressure (average of all chambers) was 214 lb. absolute, the average chamber temperature 795 deg. Fahr., and the average exhaust temperature 915 deg., with a turbine speed of 2980 r.p.m. The inlet valve control was running at 33.3 r.p.m. and the power recorded was 540 kw.

There were 20,000 explosions per hr., supplying 635 B.t.u. per cycle and 12,700,000 B.t.u. per hr. The overall efficiency measured at the switchboard figured out at 14.6 per cent. Efficiency measured at the driving shaft, with generator efficiency at 85 per cent, gave 17.2 per cent. These figures, being well in keeping with the efficiencies obtained by much larger steam turbine and piston driven units, have led the designer to believe that he is on the way to a far better efficiency, when his development has progressed to the same extent as in the other units.

It was thought at one time that the scavenging air would cost an appreciable additional windage loss on the running wheel with two rows of blades. Investigation has shown that this is not true. The loss from this source is about 20 per cent higher than without scavenging air, but in the larger sized units it is an insignificant factor. As the extra row of blades adds considerably to the efficiency with a given circumferential speed, the minor windage loss is accepted without hesitation.

Oil Turbine Tested

Tests made in May, 1923, on a 300-kw. oil turbine direct connected to a d. c. generator showed an overall thermal efficiency of 14.2 per cent. The commercial fuel used had a specific gravity of 0.86, and the consumption per hour was 161 liters (305 lb.). As the power measured was 194 kw. (480 amperes at 404

*Part I appeared at page 1329, THE IRON AGE, Nov. 20.

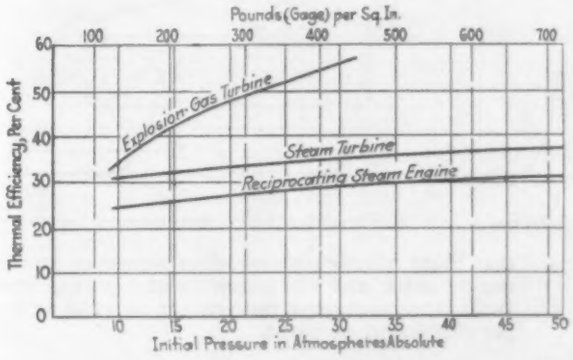


Fig. 1.—Comparison of Thermal Efficiencies of the Gas Turbine, Steam Turbine and Piston Steam Engine at Various Initial Pressure (at left)

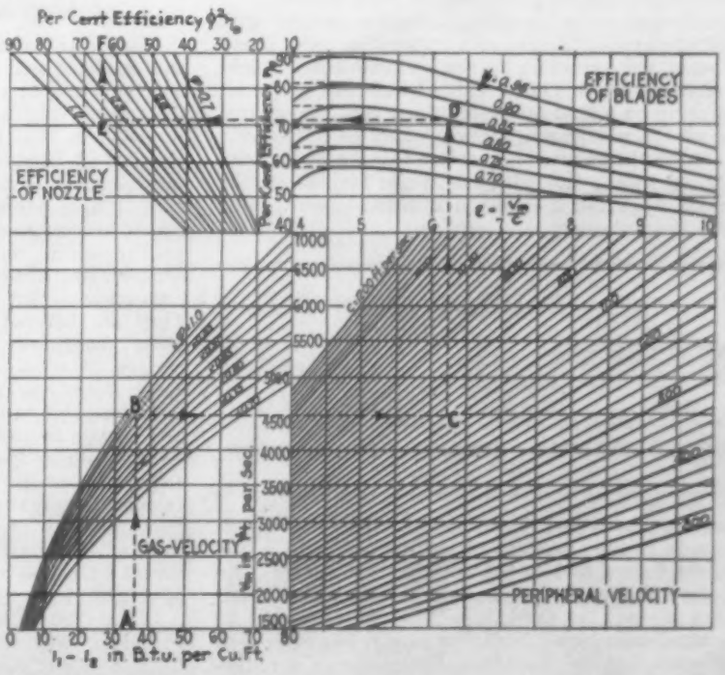


Fig. 2.—This Set of Curves Permits Tracing the Efficiency Under Any Group of Assumed or Observed Operating Conditions. The line *A-B-C-D-E-F* starts with a heat energy of 36 B.t.u. per cu. ft. of gas and a nozzle efficiency of 95 per cent, and carries the analysis through a peripheral velocity of 720 ft. per min. and a blade efficiency of 85 per cent, establishing finally a turbine efficiency of about 65 per cent (at right)

volts) the consumption per kwhr. was 1.57 lb. The temperatures in the six explosion chambers, together with the indicated pressures at the maximum during the explosion period, are shown in the table:

Chamber	Temperature Deg. Cent.	Temperature Deg. Fahr.	Explosion Pressure Atmospheres Absolute	Explosion Pressure Lb. per Sq. In. Gage
1	335	635	15.7	216
2	380	716	16.5	228
3	360	680	17.5	242.5
4	420	788	13.0	176.5
5	490	914	13.0	176.5
6	470	878	12.0	162

The exit temperature of the products of combustion was 560 deg. Cent. (1040 deg. Fahr.). The turbine was operating at 2850 r.p.m., while the number of cycles of operation per minute was 40. This gave a total of 14,400 explosions per hour in the six explosion chambers, and indicated a consumption of 11.2 cu. cm. of oil per explosion. This represents 2.12 lb. of fuel for every 100 explosions.

Capital and Operation Costs

Several calculations have been made in England in comparing three types of powerplant of about 25,000 kw. installed and 20,000 kw. working load. These are based on 1923 costs in England and for convenience are translated here at $4.50 per pound sterling. The three plants compared included units as follows:

Seven gas engine generators of 3500 kw. each.

Five gas turbine generators of 5000 kw. each.

Five steam turbine generators of 5000 kw. each.

Installation costs included complete plants with foundations and buildings, with all auxiliaries of every description, but excluding cranes, switchboards, freight and erection. On this basis Table I has been prepared.

Figuring on a load factor of 67 per cent, the annual output of the gas engine station would be 121,000,000 kwhr. With the gas turbine station this figure becomes 116,000,000 kwhr., and with the steam turbine station the same. Figuring the cost back to 1000 kwhr. units, we have the following showing:

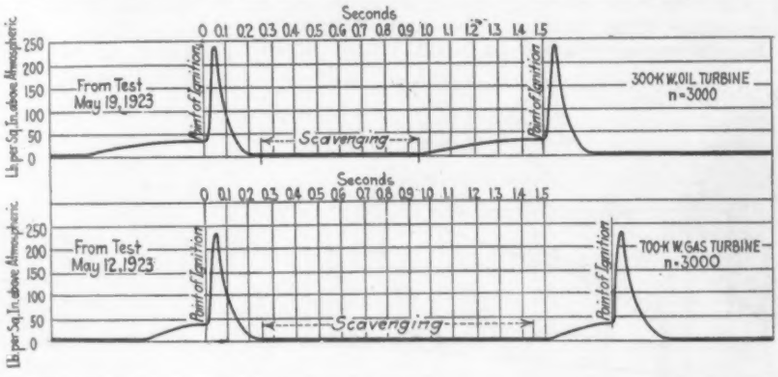
	Gas Engine Plant	Gas Turbine Plant	Steam Turbine Plant
Amortization	$2.23	$1.05	$1.68
Operating cost	0.64	0.24	0.36
Fuel cost	2.38	3.17	3.17
Total	$5.25	$4.46	$5.21
Ratio	100	85	99
Installation cost per kw.	$70.65	$36.45	$60.75
Ratio	100	51.5	86

Similar calculations were made for prospective improvements in the operation of the turbine, both in the immediate future and in the more distant future. As these depend frankly upon expectations rather than anything already in hand, it will not be necessary to enter into details here. Suffice it to say, however, that the estimate for the immediate future shows a reduction in the cost of operation from $4.46 per 1000 kwhr. to $3.95 for the same power production. For the more distant future, with certain refinements in the use of the heat absorbed by the cooling water for steam raising, etc., successive improvements are expected to bring about further operating economies. These have been calculated to result in operating costs from $3.40 to $2.63 per 1000 kwhr. At the same time it is expected that there will be corresponding economies in the gas engine plant and the steam turbine plant, bringing their ultimate figures respectively to $4.38 and $4.58 per 1000 kwhr. produced.

Table I.—Comparison of Prime-Movers and Plants

	Gas Engine Plant	Gas Turbine Plant	Steam Turbine Plant
Foundations and buildings..	$545,000	$174,000	$372,000
Plant, including royalties...	1,186,000	738,000	1,148,000
Total installation cost..	$1,731,000	$912,000	$1,520,000
Amortization:			
6 per cent on buildings...	$32,700	$10,440	$22,320
15 per cent on plant, including repairs*	237,200	110,700	172,200
Total	$269,900	$121,140	$194,520
Operating costs:			
Labor	$35,635	$19,431	$31,095
Lubrication, etc.	37,422	6,426	8,370
Cleaning materials, etc...	3,645	1,800	2,025
Total	$76,702	$27,657	$41,490
Fuel cost	$288,000	$368,000	$368,000

*20 per cent for the gas engine plant.



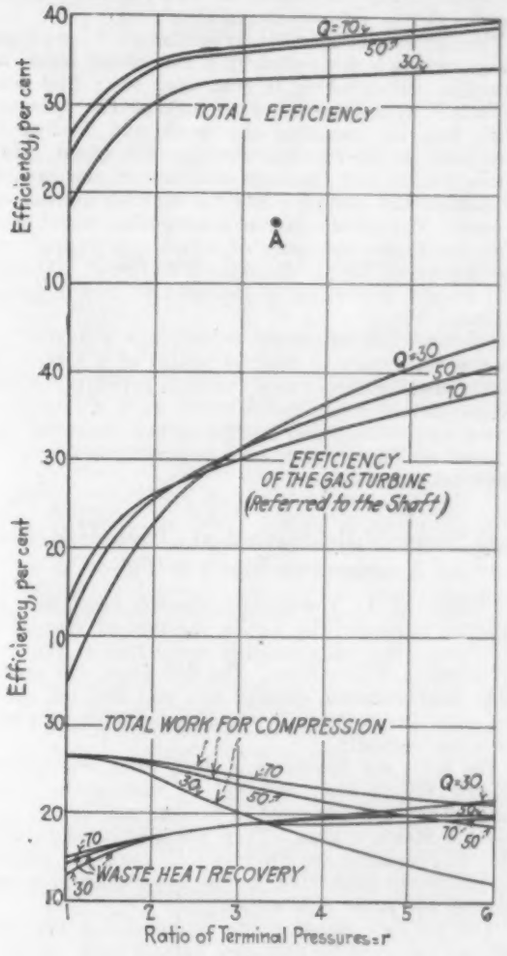
"Indicator Cards" Showing Cycles of the 300-Kw. Oil Turbine and the 700-Kw. Gas Turbine, both at 3000 R.p.m. It will be noted that the cycle of the oil turbine lasts 1.5 sec. and that of the gas turbine about 1.8 sec.

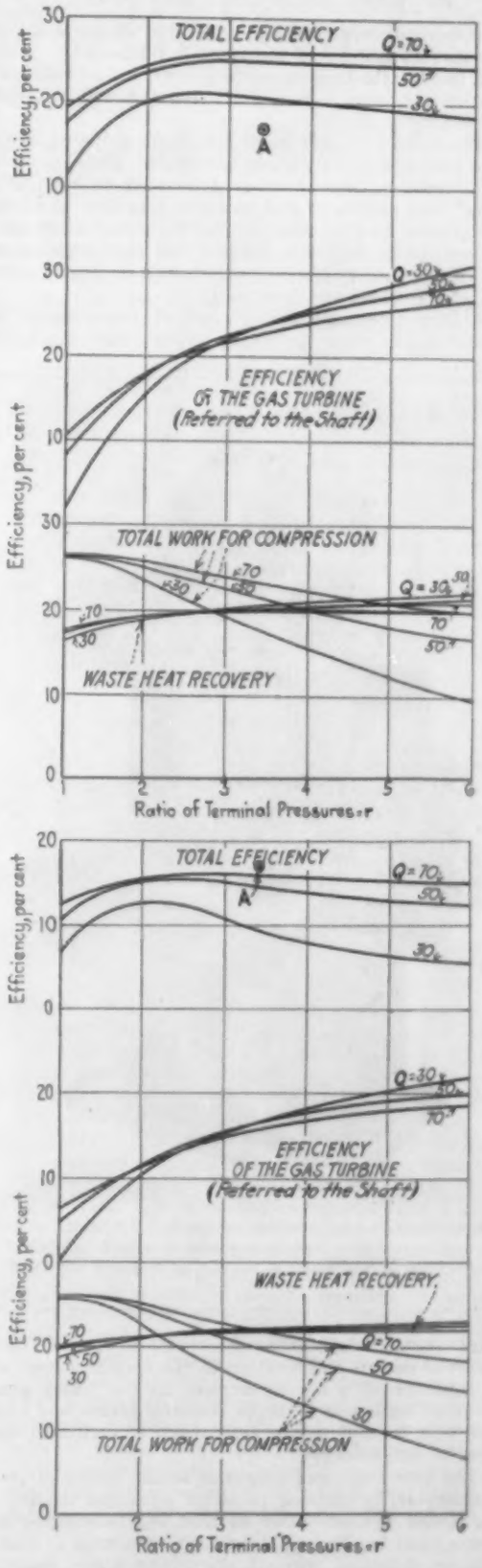
Efficiency of the Holzwarth Gas Turbine

Elaborate calculations have been made by Schuele and Stodola, well known European theorists. This is not the place to recapitulate their rather complicated theoretical calculations. One of the main results is compiled in Fig. 1, a comparison of the thermal efficiencies of ideal Holzwarth gas turbines and steam turbines and engines. While the gas turbine works with a back pressure of 15.5 lb. absolute, the steam plants are supposed to work against 1 in. vacuum.

The most recent calculations, based upon the fundamental theories of Schuele and Stodola, have been made by Dr. Ulrich Meininghaus, St. Paul, Minn. They are covered in the original calculations under seven diagrams with accompanying text. Only a portion of these can be reproduced here. From his curve sheets one can take without elaborate calculation the amount of heat energy W convertible into mechanical energy in an ideal gas turbine; thermal efficiency η_1; heat energy I_1—I_2 influencing the initial gas velocity v_m; initial temperature t_0; maximum temperature t_1; exhaust temperature t_4; heat energy I_2 left in exhaust gases, for any amount of excess air and ratios r—i. e., ratio of charging pressure to exhaust pressure. The curves of course take into consideration the variation of specific heat with temperature and pressure.

From the curve sheet of Fig. 2, can immediately be taken, without any calculation, the heat energy I_1—I_2, nozzle efficiency (ϕ with reference to gas velocity and ϕ_2 with reference to energy), initial gas velocity





EFFICIENCY Curves for Three Sets of Conditions in Accordance with Table Below. The total efficiency includes gas turbine, waste-heat recovery and compression. At A is shown the efficiency figure already attained by the Holzwarth turbine

		Example I (upper left)	Example II (upper right)	Example III (lower right)
Temperature of Mixture before Combustion (deg. Fahr.)...	t_0	140	140	140
Efficiency of Combustion	η_0	95%	85%	75%
Coefficient of Velocity in Nozzle.....	ϕ	0.975	0.95	0.925
Coefficient of Velocity in Blades.....	ψ	0.95	0.85	0.75
Peripheral Velocity of Blades (ft. per sec.)	c	800	720	620
Constant of Ventilation Loss	C	5.5	7.5	7.5
Efficiency of Waste-Heat Steam Plant..	η_s	18%	16%	14%
Efficiency of Compressors	η_p	80%	70%	60%

v_m, peripheral velocity c, blade efficiency η_b for various blade loss factors Ψ, considering the drop of gas velocity during expansion, and finally the turbine efficiency $\phi^2\eta_b$.

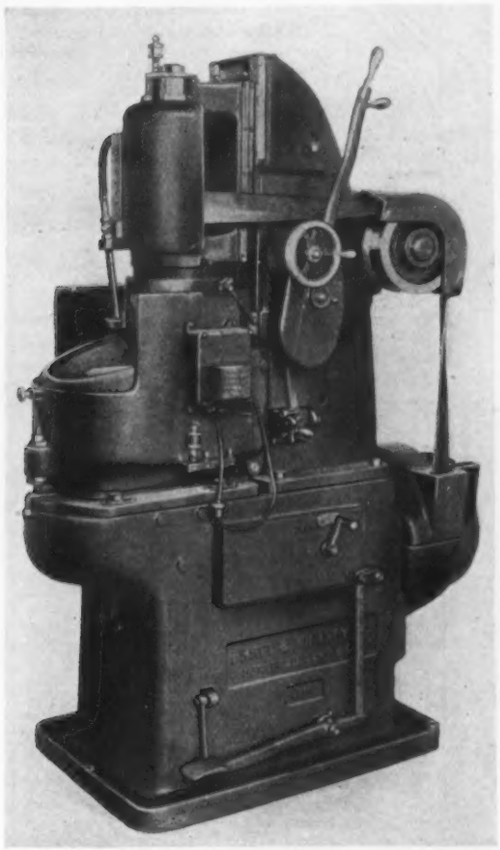
The last curve sheet, above, contains three sections. Each section gives thermal efficiency of the gas turbine with and without waste heat recovery, energy recovered in waste-heat plant, energy required for scavenging and charging, and all this under conditions of initial temperature and loss factors distinctly stated in the table, for each section. The actual results with the 700-kw. gas turbine and the 300-kw. oil turbine are plotted at *A*. It is evident that the conditions under which these two machines worked are better than those enumerated under Section III, but not so good as those of Sections I and II. This curve sheet gives a good idea of the influence of the various factors in the gas turbine process and also of the future possibilities.

Improves Rotary Surface Grinder

Improvements recently incorporated in the 8-in. rotary surface grinder of the Pratt & Whitney Co., Hartford, include the lengthened feed lever, use of ball bearings on the change-gear shaft and the addition of a new magnetic chuck.

The machine is employed for rough grinding coverplate castings, doors, guards and similar parts, in which work speed of operation is attributed to the "drill press" feed employed and to rapid magnetic chucking. The grinder may be used also for high-production work to close limits, and it is claimed that close approximation of a lapped finish may be obtained by proper selection of the wheel and feed used.

Enlarged passages for the coolant; mounting of the counterweight chain pulley on roller bearings; a new chuck switch; detachable construction of the chuck; improved design and location of the coolant pump, and the addition of a spring bumper to the water guard are other improved features. Control levers and knobs have been located within easy reach to facilitate operation of the machine.



Improved Rotary Surface Grinder. Among other changes is a new fine-mesh magnetic chuck. Speed of operation is attributed to rapid chucking and the "drill press" feed

The new fine-mesh magnetic chuck, which is 10 in. in diameter, is claimed to be of advanced design. It is guarded against water so that short-circuiting and burning out is eliminated, and it is mounted so that it may be detached without disturbing other units of the machine. Cast-iron guards completely surround the chuck and the hinged spray guard provided may be lowered out of the way when work is loaded or unloaded. The entire magnetic chuck mounting is hinged and provided with screw adjustment for tilting the chuck. By means of this device and a centering plug for keeping the work central on the chuck, washers and similar parts may be ground concave or convex as desired. This attachment is of advantage also in the toolroom for cutters which require a slight concave relief on their sides. An improved switch for controlling the magnetizing and demagnetizing of the chuck is mounted on the side of the machine.

The drive to the chuck incorporates a two-speed gear change, which is controlled by a convenient lever, and a friction clutch which is controlled by a foot lever. The latter arrangement leaves both of the operator's hands free for handling the work and feeding the wheel. As in the previous machine the wheel spindle is mounted in ball bearings and means are provided for eliminating end play and for making adjustments for wear. The spindle carries a detachable wheel mount which facilitates changing of wheels. A cupped type grinding wheel, 8-in. in diameter is employed. A safety band around the wheel is intended to guard against breakage.

Two methods of wheel control are provided, one being a quick vertical feed by means of a lever, "like a drill press," which is used in rough grinding. A fine-feed handwheel graduated to 0.0002 in. is also provided for accurate setting and feeding of the wheel for close limit work. The machine may be arranged for belt or individual motor drive.

New Sheet Mills Started at Brier Hill Plant of Youngstown Sheet & Tube Co.

Officials of the Youngstown Sheet & Tube Co. a few days ago witnessed the formal starting of four of the new eight sheet mills recently completed at the Brier Hill works at Youngstown. The new plant will produce black, blue annealed, pickled and full finished sheets, employing about 600 skilled and semi-skilled men when operating normally.

The mills are housed in a steel, brick and concrete building 800 ft. long and 300 ft. wide at its widest point. They are arranged in tandem and driven by a 2000 hp. Mesta engine. They are electrified throughout. The furnaces are fired by coke oven gas entirely, the gas being generated in the by-product coke oven plant at the Brier Hill works.

The building housing the equipment is unusually high and equipped for abundant natural light. A forced cooled-air ventilation system has been installed, for use during the summer months. Other devices have been installed to insure workers the most comfortable operating conditions, and the plant is regarded as a model in this respect.

Robert Mullaly, superintendent of the Brier Hill sub-district sheet and plate mills, will have general jurisdiction over the new plant, but its operation will be in immediate charge of Edward Phelan, who has been superintendent of the company's Western Reserve works at Warren.

Employee Representation Plans

Plans for employee representation in the management of industry are treated to a considerable extent in a 28-page booklet just issued by the Policyholders' Service Bureau of the Metropolitan Life Insurance Co., New York. An appendix in tabular form gives details of the plan as worked out in 11 representative plants, including the International Harvester Co. and the Colorado Fuel & Iron Co. as representatives of the iron and steel industries. The booklet represents an analysis of the various plans, rather than an appraisal of their success. It should form the basis, therefore, of careful study in detail for those interested. A bibliography is included.

Buys Fluorspar Mine

The Hillside Fluor Spar Mines, Chicago, with operations at Rosiclare, Ill., has purchased from the receiver of the Matthew Addy Co., Cincinnati, a fluorspar property known as the Keystone Mine in Crittenden County, Ky., located about six miles from Marion. The mine, embracing 60 acres, has not been operated for about ten years, but contains the highest grade of acid spar. The new management expects to develop the property next spring. The new acquisition will supplement the company's facilities at Rosiclare, Ill., where it has a large mine and a modern fluorspar mill.

Founders and Farmers to Cooperate

New Movement Featured National Founders' Meeting—Child Labor Amendment Disapproved—Apprentice Training Given New Significance

THE National Founders' Association, meeting for its twenty-eighth annual convention at the Hotel Astor, New York, on Nov. 19 and 20, exchanged ideas with members of the National Grange in an effort to secure a better understanding between industry and agriculture; discussed ways of recruiting apprentices, acknowledging immigration bars to be up for 10 years; took counsel on labor agitation, impending in a time of prosperity; sounded the sentiment on uniform cost accounting and pronounced against the proposed child labor amendment to the Constitution.

William H. Barr, Lumen Bearing Co., Buffalo, again was elected president by unanimous choice, and his efforts in bringing unified action on essential matters brought out expressions of frank commendation. F. B. McBrier, Erie Steam Shovel Co., Erie, Pa., was elected vice-president, and J. M. Taylor, Chicago, continues as secretary. A. E. McClintock was re-appointed commissioner. District committees elected are given in another column.

The annual address of President Barr, embodying his usual comprehensive survey of conditions in industry, was reviewed in THE IRON AGE of Nov. 20, page 1355. Commissioner McClintock described the year in industrial relations, characterizing it as one remarkably free from labor troubles among members of the association. At the same time he warned against the danger of assuming this shall continue, for experience shows that times of prosperity, full employment and high labor demand breed unrest. Agitators are more active, the men more disposed to listen, and management is defenseless under a crushing need for high production.

L. A. Hartley, State supervisor of trade and industrial education in Nebraska, now engaged by the association to promote industrial education in foundries of members, sees only one way to avoid an impending shortage of molders—that is, to make the foundry attractive to the lad out of school. Present restrictions on immigrant labor deprive the foundry of its former source of apprentices. Next year about 150,000 foreigners will be admitted; practically none of these can be counted on by founders, for the immigration office does not recognize the foundry industry, Mr. Hartley finds. So American youths must be attracted to the foundry, and this, he believes, can be done only by creating a new atmosphere about the foundry, in which a boy may see a promising future and in which his parents may be certain that he will be guided by guileless hands.

Shadows of Pending National Legislation

The outstanding contribution to the Wednesday morning session of the meeting was an address by James H. Emery, counsel for the association. After referring to the cooperative movement instituted between industrial leaders and leading figures in agriculture, as mentioned at length by President Barr, Mr. Emery touched on the results of the national election. This he regarded as proving the vote to be one of confidence, and largely personal, in the successful candidate. "It does not mean," he said, "that revolutionary effort is at an end. It is natural to resort to complacency when a particular policy seems well settled," as this one, for example, appearing like a repulse of radicalism.

We are confronted, he continued, with amendments to the Constitution of the utmost significance. In the coming short session, though the greater part of the time will be given up to the passing of 13 supply bills, interspersed throughout the deliberations there will come up the bill for repealing the railroad labor board and substituting therefor a plan of the railroad brotherhoods in respect to the settlement of disputes. The present board contains representatives of employees, the public and the transportation managers. Investigations are compulsory, but findings cannot be forced except through the weight of public opinion. "Of course, we admit that the present board has not worked to the complete satisfaction of everybody, but in its four years it has gained an authority and has been a deterrent to the calling of any general strike."

The substitute measure would create a board composed only of representatives of the carriers and the employees. Disputes would go to regional boards made up of men appointed by the President on the nomination of the railroads and the 16 railroad labor organizations. The public is eliminated, but, of course, pays the costs. Besides the difficulty of preventing regional or even nation-wide strikes under the proposed arrangement, official character is given to the personnel of the board, as no one may be appointed except a member of the unions.

Mr. Emery referred also to the pressure to force into the arsenals and navy yards all of the work which would be presumed to come under national defense provisions, undoing the efforts of the war and navy departments toward maintaining a close contact between Government and all of the country's industrial establishments regarded as indispensable to a war emergency program of manufacturing. The pressure arises in part from using prices in the Government institutions without inclusion of overhead expenses necessary in a private plant. He urged that bringing arsenals and even navy yards into competition with private plants was likely to destroy the real purpose of the arsenals in their being laboratories for the study of war material. He added that there would be the usual riders on all appropriation bills prohibiting time studies or other measures designed to improve the efficiency of production.

He referred to the social consequences of the publicity given to income tax returns, intimating the variety of improper conclusions that could be drawn from them. He indicated there would be a repeal of the clause of the act of 1924 which provides that lists of those making returns shall include the amount of the tax as well as the fact that a return was made.

He took up the proposed twentieth amendment to the Constitution to prohibit the employment of all persons under eighteen years of age. He condemned the legislation in no uncertain terms and referred to it as giving authority which it is never intended to use. On the maps of the proponents of the amendment, for example, the State of Massachusetts is shown black because it has no statute prohibiting the employment of minors in mines. Apparently the fact that Massachusetts has no mines is no reason why there should not be legislation affecting them.

Status of the Farmer

The troubles of the farmer were told by John McSparran, Pennsylvania, representative of the National Grange. No protection can be given him as industry obtains, he said, chiefly because farm products are perishable and must compete upon open world markets. The farmer must accept prices for his products at home which the manufacturer gets for surplus products shunted into foreign markets.

Mrs. Dora Stockman, lecturer of Michigan State Grange, spoke of the need for adjusting production, meaning, of course, as between industry and agricul-

ture. As proof of benefits accruing from such an adjustment, she cited the case of the "beet sugar industry in Michigan, which would have been idle but for cooperation with the farmers. This resulted in a record year for Michigan beets."

Tracing further the interrelation of farm and plant, Mrs. Stockman said, "No industry can long prosper at the cost of another. Every slump in agriculture is followed by a slump in industry, and upon some equitable adjustment depends the prosperity of all." The speaker believed that a situation which lures youth from the farm in such alarming numbers is perilous to all persons and industries dependent upon the farm. As example she gave figures for Michigan: "Of 200,000 farms in Michigan 41,000 were abandoned last year."

Resolutions Adopted

Pertinent to the child labor amendment, the assembly voiced its complete disapproval, pronouncing it "a proposal to destroy, not merely the right, but the obligation of each American community to meet its local problems in terms of its special condition, as is now being done rapidly; and under the guise of protecting childhood, would authorize by necessary implication the control of all the minor life of the nation, the mode of its training and education, the duties of its parents and guardians, and substitute the bureaucratic regulation of remote, expensive and irresponsible authority for local and parental control."

In a resolution adopted the members "pledge themselves to the protection and betterment of child life in our respective communities, disapprove of this revolutionary grant of power to the Congress as repugnant to our traditional conception of local responsibility and self-government, tending to stimulate the growth of enlarged and extravagant bureaucracy and serving to defeat the very humanitarian purpose which its disguise suggests."

Another resolution was adopted in which it was the sense of the convention, "that it would be an advantage to the foundry business, and that it would facilitate prompt quotations and cut down the overhead of conducting the foundries if all the blue prints submitted for prices had the weight of the casting on the blue print."

Personnel Work at Bethlehem

What is being done at the plants of the Bethlehem Steel Corporation was presented interestingly by J. M. Larkin, assistant to the president, speaking on "Relations in Industry." He outlined the practice of the company, particularly on its application to the Lackawanna plant and emphasizing the very concrete gain profit-wise of cultivating the interest and good will of employees. Diminished labor turnover was the first fruit of the new system and gradually a complete transformation was effected, marking the change from a losing to a profitable enterprise.

"There are four things," Mr. Larkin said, "which the employee desires: A steady job, adequate, real wages, good supervisors and a chance to rise on merit." He sketched the method used in employing, whereby a man is eligible for hire, irrespective of color, creed, nationality or affiliations; also the care given to selectivity, determining where a man is happiest and best adapted. Much attention is given to the home life of employees, helping them in their problems, making better citizens and better workmen. And all this is done without a show of the despised "benefit stuff," repugnant to the pride of employees. Mr. Larkin added:

The Plan at Lackawanna

"An example of what human relations can do is furnished by our experience at a plant acquired two years ago. The turnover in labor has been reduced from 30 per cent monthly to 10 per cent, with a recent minimum of 3 per cent. Whereas the plant formerly depended upon labor shipped in from remote places, its present needs are supplied from voluntary applications.

"The number of days lost to the employee through accidents was reduced from 22 days per 100 men to 13 days and frequency of accidents reduced to one-third of the figures two years ago."

Homes were built and sold to employees at cost and "all this was done without losing money, even though the average rental on a typical five-room house is as low as $10 a month." Dealing with wages, he continued:

Wages Related to Performance

"We believe that this (adequate wage) can best be afforded the employee by relating his wages to performance and that he shall be rewarded in proportion to skill and service rendered. This policy is opposed to that which groups together at a uniform wage large bodies of employees. Such grouping tends to discourage effort and reduces output to a standard set by the least efficient."

The Bethlehem company aims at continuous employment, which Mr. Larkin regards as excellent practice, for although in stress periods the company bears a loss which might be cut off by discharging workers, it more than pays when business revives and the mills must jump quickly to capacity production.

Other bonds are formed between the company and the worker by helping him purchase stock in the company and offering inducements to retain it, by urging him to keep up an attractive home, by bonuses and pension funds, by nurse and hospital assistance and by cultivating in him a bond with his community.

Each fall the president makes a trip to meet representatives of the 70,000 employees and he takes occasion to explain conditions in business, also the "application of income accruing from the business of the company."

"Even before the results from large expenditures (at Lackawanna plant) had been realized, the results from the improvement in the morale and spirit of the men had been such as to make a plant which had been losing money pay its own way."

A Study in Cost Accounting

Intense interest was shown in the discussion on foundry cost methods by E. T. Runge, E. T. Runge Cost Co., Cleveland. Comparing various methods in cost accounting, he bore down heavily on the importance of keeping in mind that it is a foundry that is being operated and not a clerical cost system. The discussion was followed by a lively round of questions and comment, from which was evident a strong opinion in favor of uniform cost accounting. As one member expressed it, "herein lies the antidote for unprofitable competition."

Mr. Runge prefaced his remarks by citing the result of a survey which estimates that 72 per cent of the projected enterprises are doomed to failure due to poor cost methods. In a comparison of various methods he pointed out salient dangers, chief of which arises from placing estimates on the more expensive cored castings entirely out of line with plain castings and at a figure too low to leave a safe margin of profit. In just such a case, he explained, a foundry will book heavily on those products which are out of line, and the consequence is disastrous. Mr. Runge suggested figuring core expenses at a flat rate to avoid unnecessary work, such as weighing, as well as to avoid the use of a sliding differential which is an annoyance to salesmen.

Simplicity is the prime virtue of a good cost system, Mr. Runge believes, and a system which is correct in 95 per cent of the costs, the rest being estimated, is deemed most practical. "Get the fundamentals right

Officers and District Committees for 1924-25 Elected by the National Founders' Association

President

William H. Barr,
Lumen Bearing Co.....Buffalo

Vice-President

F. B. McBrier,
Erie Steam Shovel Co.....Erie Pa.

Commissioner

A. E. McClintock.....Chicago

Secretary

J. M. Taylor,
29 South LaSalle Street.....Chicago

Treasurer

Chicago Trust Co.....Chicago

DISTRICT COMMITTEES

First

New England States.

Charles Berger,
Eastern Malleable Iron Co.....Naugatuck, Conn.
Robert E. Newcomb,
Deane Works, Worthington Pump & Machinery Corporation.....Holyoke, Mass.
Thomas Officer,
Sullivan Machinery Co.....Claremont, N. H.
Walter Perry,
Farrel Foundry & Machine Co.....Ansonia, Conn.
H. L. Steeves,
Rhode Island Malleable Iron Works.
Hillsgrove, R. I.

Second

New York and that part of New Jersey North of a line drawn from Lambertville to Point Pleasant.

W. H. Thomas,
Straight-Line Engine Co.....Syracuse, N. Y.
Frank Myers,
Poughkeepsie Foundry & Machine Co.,
Poughkeepsie, N. Y.
D. F. O'Brien,
A. P. Smith Mfg. Co.....East Orange, N. J.
Norman J. Gould,
Goulds Mfg. Co.....Seneca Falls, N. Y.
C. W. Noble,
Noble & Wood Machine Co...Hoosick Falls, N. Y.

Third

Pennsylvania, Delaware, Maryland, District of Columbia, and that part of New Jersey South of a line drawn from Lambertville to Point Pleasant and including those two towns.

O. R. Read,
Read Machinery Co.....York, Pa.
Frank J. Epple,
Trenton Malleable Iron Co.....Trenton, N. J.
C. S. Koch,
Fort Pitt Steel Casting Co.....McKeesport, Pa.
Thomas W. Pangborn,
Pangborn Corporation.....Hagerstown, Md.
C. H. Hoffstetter,
Odin Stove Mfg. Co.....Erie, Pa.

Fourth

Lower Peninsula of Michigan, Ohio, Kentucky, Indiana and West Virginia.

William Greenbaum,
Acme-Palmers & DeMooy Foundry Co...Cleveland
S. W. Utley,
Detroit Steel Casting Co.....Detroit
R. J. Redmond,
Buckeye Foundry Co.....Cincinnati
J. Edgar Lee,
Challenge Machinery Co.....Grand Haven, Mich.
William D. Hamerstedt,
Rockwood Mfg. Co.....Indianapolis

Fifth

Illinois, Missouri, Kansas, Nebraska and Iowa.

C. E. White,
Deere & Co.....Moline, Ill.
H. E. Muehnic,
Locomotive Finished Material Co...Atchison, Kan.
H. N. Strait,
H. N. Strait Mfg. Co.....Kansas City, Kan.
Warren Jones,
W. A. Jones Foundry & Machine Co.....Chicago
Walter Medart,
Medart Co.....St. Louis

Sixth

Wisconsin, Minnesota, Upper Peninsula of Michigan, North Dakota, South Dakota, and the Province of Manitoba in Canada.

E. H. Neese,
Beloit Iron Works.....Beloit, Wis.
M. H. Pettit,
Simmons Co.....Kenosha, Wis.
Frederic Crosby,
American Hoist & Derrick Co.....St. Paul, Minn.
Emil Vilter,
Vilter Mfg. Co.....Milwaukee
F. H. Clausen,
Van Brunt Mfg. Co.....Horicon, Wis.

Seventh

Provinces of Ontario and Quebec in the Dominion of Canada.

Membership committee as a whole.

Eighth

Virginia, North and South Carolina, Georgia, Florida, Alabama, Mississippi, Arkansas, Louisiana, Oklahoma, Texas and Tennessee.

George M. Morrow, Jr.,
Birmingham Machine & Foundry Co..Birmingham
W. A. Griswold,
Gray & Dudley Hardware Co.....Nashville, Tenn.
W. C. Trout,
Lufkin Foundry & Machine Co.....Lufkin, Tex.
Ward Delaney,
W. K. Henderson Iron Works & Supply Co.,
Shreveport, La.
W. F. Tynes,
Hardie-Tynes Mfg. Co.....Birmingham

Honorary Member of Administrative Council

O. P. Briggs.....Minneapolis

and details will follow," said he. "Use a system that may always be a working skeleton, then as items change it will be found flexible and will permit readjustments."

"Where there was a difference of 8c. in cost for a group of foundries, this after three years of standardization was reduced to a difference of ½c. Standardization brought this about and makes for fair competition."

Some one suggested a plan of checking foundry costs of all members of the association by an expert to be appointed by that group. The idea met with approval and President Barr said, "If we could do anything to put cost accounting on a common basis, say in the Eastern foundries, and remove evil competition, it would be a fine thing."

Mr. Runge's contribution, explaining methods by aid of charts, showing the evils of one and the benefits of another, was regarded extremely valuable. Though his discourse was extemporaneous, he has promised to prepare a similar study which will be printed by the association.

Estimating Weights for Bidding Purposes

Thomas E. Durban, Erie, Pa., argued for a broad adoption of the practice of designers indicating weights on blueprints when asking foundries to bid on proposed work. This is a subject Mr. Durban has aired in THE IRON AGE and which he regards as an important item toward eliminating waste in industry. He has found that individual bidders have required 3 to 5 hr. time of an engineer to calculate weights and each has an unnecessary cost of $4 to $6 overhead in addition. In the nature of the case, the designer must be acquainted with the weights. He spoke of an army experience in which 50,000 pieces of an article difficult to calculate for weight brought out that estimates ranged from 18 to 54 lb., whereas the actual weight was 28 lb. "Yet," he emphasized, "weight is a factor in establishing prices."

Communism or Common Sense

Jacob Rubin, a native of Russia and a resident of Milwaukee, discussing "Communism or Common Sense,"

drew a picture of Russia under the Soviets, outlining the schemes of the Third Internationale as observed from within, declaring the avowed purpose to be world rule by the proletariat and pronouncing it impossible for the ordinary visitor to that country to see its subtle operations. To one who spent his childhood in the land, learned its language and studied its government, it seems utter folly that men like LaFollette and Brookhart can go there for a few months and return to tell how well things are done there. Mr. Rubin came to this country at 13, studied Karl Marx and became an ardent socialist. After the Russian revolution he returned to Russia, was imprisoned, even sentenced to death. After suffering under the new régime he turned against the socialist faith and rendered valuable service to the United States.

"It is impossible for a visitor to see what goes on in Russia unless he travels incognito. Agents will see that he gets only the favorable impressions. It is also necessary that the visitor speak the language of the people," Mr. Rubin said.

"Lenin and Trotsky have tried to execute the philosophy of Karl Marx, and I have found it is a fine dream but an awful bitter realization. It takes away all incentive to useful occupation. Marx forgot one thing—human nature.

"Sovietism began in 1918 with fanatics, most of whom have since turned hypocrites. It has substituted a new system for rent, capital and labor, with the result that Russia is taking a holiday. If you ask why so many are employed and so little is produced, they answer, 'The Soviet Government gives work to all; no matter if they don't produce.' Russians are exploited under the Soviets a thousand times more than ever could be under any other aristocracy. Russia, despite being the greatest country in natural resources, is dependent on outside aid. Why? Because they have reduced the capitalist to the level of the worker, but did not raise the worker."

Apprenticeship Training

Thursday morning's program opened with an address by L. A. Hartley, supervisor of trade and industrial education in Nebraska. His subject was "Apprenticeship in the Foundry."

Mr. Hartley told the association that "the foundrymen do not speak a common language. We must arrive at a common understanding as to what apprentice training is, then build a unified program the country over." This is his definition of an apprentice: "In a broad sense, a boy or man in the course of training to become a foreman or supervisor."

Each foundry is a school, Mr. Hartley said, and founders are allowing men of warped vision to be the tutors. Young men are allowed to go to these tutors without supervision. This is very dangerous, but, further than that, management is missing an opportunity to build such a morale among its employees as may become an asset. He added:

"If you start all apprentices with the idea in mind of making foremen and supervisors, you will always have molders, but better ones; also it will make good skilled men."

Founders were urged against the practice of taking another man's employees. The industry should be regarded as a whole, good molders should be in the making at all foundries, and all must "avoid piracy, the practice of robbing another man of his skilled help."

How Many Should Be Trained

Charts and curves were used to help determine the number of skilled men a foundry should train. All figures were taken from the Bureau of Labor Statistics. The speaker finds that unless more skilled help is trained the foundrymen will see their ranks severely depleted from mortalities during the next four years. Among the requirements for 1925, Mr. Hartley finds that 1205 skilled journeymen will be required and 968 foremen and supervisors. Foundrymen as a whole should have 2300 apprentices; instead they have about half that number.

"Previously," he added, "we have drawn our labor supply from the foreign born. Next year 150,000 will be admitted to this country, but you will get few of them. For 10 years immigration will be restricted and you must turn to American labor. The policy in the United States is not to reverse such legislation short of 10 years."

He advised doing with apprentices as is done with materials. They should be treated scientifically. By applying the laboratory method he determines that the ratio of labor which should be trained for foremen and supervisors should be about 1 to 7.

Attitude of Teachers

Later in the afternoon Mr. Hartley was asked concerning the attitude of parents and teachers toward allowing boys to work in foundries. His answer was that there is much opposition to be overcome in this matter and for emphasis he read extracts from a book on community civics, in which the author refers to such occupation as "blind alley work, which leads to nowhere." Children are taught that "mill work does not lead to the better things in life," and are impressed that when a boy goes to work in a foundry his ambitions are checked at the door.

In an effort to stimulate apprentice training of the right sort, Mr. Hartley, it is understood, has been engaged by the founders associations to promote industrial education at the foundries of members.

Report of Commissioner McClintock

Commissioner A. E. McClintock reviewed conditions in the industry, urging closer relations with employees, more thoughtful training of apprentices. He spoke of the comparative freedom from strikes in shops of members. During the year it was necessary for the association to give support to only one member, involving a strike of 53 molders and coremakers. Mr. McClintock warned that while the past year was somewhat free from labor troubles, it should not be assumed that this condition will continue indefinitely; that experience has shown that union activity increases as business revives.

The most hopeful thing about the apprentice problem, the commissioner believes, is the increased interest shown by executives. In recent years boys out of school have been unwilling to take up foundry work and in consequence "the additions to the molding trade have been largely made by breaking in unskilled labor on molding machines. In other words, promoting men from the gangway.

School Boys as Apprentices

"However, it is now being demonstrated that boys of the class above (boys out of school) are ready and willing to take up the trade of molding where management is prepared to give a definite and systematic course of instruction. The parents, as well as the boy, need to be assured that in entering upon foundry work, an industrial educational course is being undertaken, and when the term of apprenticeship is completed, the opportunity will have been provided to become a full-fledged journeyman molder.

"We have talked a great deal about the need of apprentices but have failed to provide the facilities for a definite course of training, and have been inclined to dismiss the subject in the opinion that boys from our schools wanted only white collar jobs.

"Our immigration laws will probably not be changed for at least ten years and in the meantime American industry will be forced to make the best use it can of our present man power."

Industrial Relations

Turning to industrial relations, Mr. McClintock said observation has taught him "that those firms which have made the greatest progress in improving industrial relations have first endeavored to put in writing a definite statement of what they believe to be a square-deal policy governing men and management.

"The success of the labor agitator is very largely due to the fact that management has permitted leadership of its workmen to pass to the labor demagogue, in-

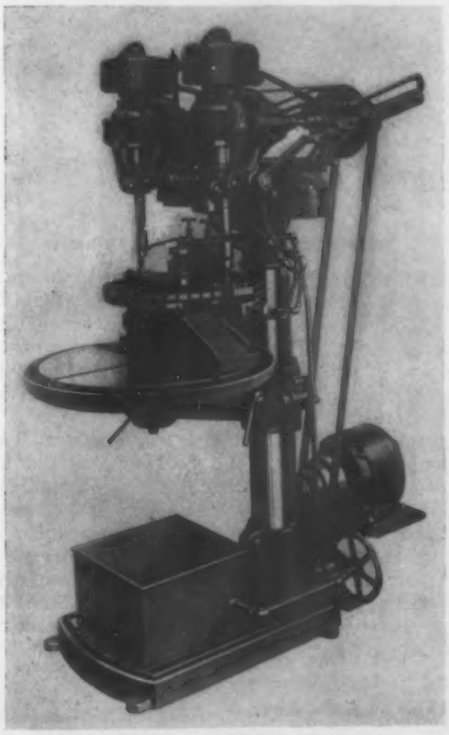
stead of continuing to hold leadership through the foremen. I predict that the day is not far distant when industry generally will realize the necessity of organizing the supervisory force in each establishment for company leadership of its men. When that time comes, the human problems in industry will be handled just as effectively as are now the production problems; and the labor agitators will be less numerous, because the calling will be less profitable.

"This association, while believing in certain fundamental principles of industrial relations which it has patriotically defended, has never been unmindful of its duties and obligations to its employees and to society. For more than a quarter of a century you have made an honest and sincere effort to make the foundry a better and more agreeable place in which to work. Engaged in a basic industry, rendering a distinct and valuable service to civilization, you have not been unmindful of the happiness and welfare of those engaged with you."

Double-Spindle Pneumatic Oscillating Tapper

A double-spindle automatic pneumatic oscillating tapping machine incorporating the features of the company's single-spindle pneumatic oscillating tapper described in THE IRON AGE of Sept. 20, 1923, has been added to the line of the W. Gaterman Mfg. Co., Manitowoc, Wis.

In tapping by hand, the tap is backed off a little when the chips pack and bind the tap, thereby saving the tap and thread. The machine illustrated is said to operate on the same principle, but is more sensitive because the working strain is weighed to a fraction of an ounce by the adjustable spring scale balance drive on the tap. The pneumatic action is positive and oscillates the tap spindle automatically when the resistance on the tap is greater than advisable. The backing up and going forward works quickly, but only when necessary to prevent breakage of the taps or stripping of the threads. It is claimed that this pneumatic control permits unusual rapidity in tapping.



Pneumatic Oscillating Tapper With Automatic Air-Cylinder-Indexed Rotating Jig

The machine illustrated, which is designated as the No. 4 A 2, is equipped with an automatic rotating jig which is indexed by a small air cylinder. If any station is not loaded by the operator, or if one spindle is tapping a difficult hole requiring more time, the other spindle will tap and wait until the cycle of the first spindle is completed. The jig shown is employed for holding pressed steel wing nuts using ⅜—24 taps, ⅝ in. deep, bottom hole. The tapping is at the rate of 2000 an hour, full thread. Parts that cannot drop out of the jig are ejected upward.

The capacity of the machine in steel is ⅛ to 5/16 in. The height overall is 63 in. The distance from the spindle to the column is 9½ in. and the vertical adjustment of the table is 21 in. Spindle speeds of 340, 520 and 800 r.p.m. are available.

Vote to Adopt Reduction in Steel Lockers

WASHINGTON, Nov. 25.—Reduction in the present variety of steel lockers from more than 65 sizes and types to 17, was voted on Wednesday of last week at a meeting of manufacturers, distributors and users of this commodity held in the Department of Commerce under the auspices of the Division of Simplified Practice. The meeting brought together representatives of the National Association of Public School Business Officials, the American Electric Railway Association, the United States Chamber of Commerce, the American Home Economics Association, the International Y.M.C.A., International Association of Fire Engineers, the Army, Navy and other Government bodies.

In accordance with the unanimous action of the joint conference the Department of Commerce, through the Bureau of Standards, recommends that stock sizes and dimensions conform to the following simplified list:

Double Tier

Width (In Inches)	Depth (In Inches)	Height (In Inches)	Overall Height Including Leg (In Inches)
12	12	36	78
12	15	36	78
15	15	36	78
12	12	42	90
12	15	42	90

Single Tier

Width (In Inches)	Depth (In Inches)	Height (In Inches)	Overall Height Including Leg (In Inches)
12	12	60	66
12	15	60	66
12	18	60	66
15	15	60	66
15	18	60	66
12	12	72	78
12	15	72	78
12	18	72	78
15	15	72	78
15	18	72	78
18	18	72	78
18	24	72	78

This simplified list of sizes and dimensions becomes effective as applying to new production April 1, 1925, and is subject to regular annual revision by similar conference.

Meeting of Quad City Foundrymen

H. Bornstein, chief chemist Deere & Co., Moline, Ill., was the speaker at the monthly meeting of the Quad City Foundrymen's Association held Nov. 17, at the Davenport Chamber of Commerce, Davenport, Iowa. Mr. Bornstein spent three months last summer visiting England, France, Italy, Belgium and Switzerland, and discussed the economic and business conditions of those countries. Likewise he described foundry practices and costs of the various plants he visited in Europe. A point which he emphasized was the fact that the cost of materials in most European countries is approximately the same as in the United States, but that the wage scale is very much lower. He found no specialized production foundries such as those of the automobile builders in this country. He called attention to the thoroughness of apprenticeship training methods abroad.

EXPORT PRICES STRONGER

Export Quotations Show Greater Firmness—Japan Retrenching—Rail Inquiry Expected

NEW YORK, Nov. 25.—In contrast to the activity in domestic business, export trade continues dull. Business with South American markets seems to be improving slightly. Chinese merchants are once more exhibiting a normal interest in wire shorts and some small purchasing is reported. The Japanese market is about as quiet as it has been at any time this year. There are a few inquiries for tin plate, but merchants are apparently not inclined to close business at present prices, which are higher than for some time.

Export quotations on tin plate today figure back to a basis of about $5 per base box. One exporter in New York claims to have recently booked an order for 15,000 boxes of oil can tin plate for Japan. The sheet market is firmer for export, $95 per ton, c.i.f. Japan, being about the minimum quotation of American mills, while British prices are $1 to $2 per ton less. With the yen continually declining, sheets are being sold in Japan today at a price that figures at current exchange rates about $84.50 per ton. Exporters in close touch with Japanese conditions are inclined to look for still further recession of the yen in international exchange, before there is an upward movement, pointing to the rumor that the Japanese Government in an economy program is curtailing activities of commercial attachés, etc.

Among current inquiries from Japan that are active is one from the city of Kobe for about 900 tons of sheet steel piling, on which bids were opened Nov. 20. As a French maker, as well as two prominent American mills, were specified, the business may not be placed in the United States. An inquiry is expected early in December from the Taijo Denke Kabushiki Kaisha for two miles of 82-lb. rails and one-half mile of 117-lb. grooved rails. The 275,000 ft. of gas pipe recently inquired for by the city of Kobe is reported to have gone to a large Japanese export house, which awarded the business to an American mill. The six miles of rails and several sets of manganese steel switches and crossovers recently inquired for by Kobe municipality was placed with Suzuki & Co., New York.

Permanent reconstruction in Japan will not begin for three years, according to the Far Eastern division of the Department of Commerce. There must be plans for the physical reformation of streets and the adjustment of land holdings. Japanese bankers and experienced industrial leaders appreciate the fallacy of the statements of early adjustments, and they go so far as to predict that it will be a decade or longer before this gigantic reconstruction program becomes a reality. The temporary buildings will not give way to permanent construction until necessity requires and in any case they are protected by law for a period of five years. In the meantime, whether the city and national governments will carry out their announced program of reconstruction and expansion of public utilities prior to the expiration of the five-year period, remains an open question. The present temporary structures have been built on approximately the old locations and the carrying out of the ambitious street reconstruction program will involve the destruction or removal of a large number of them. The present cabinet is committed to a program of retrenchment and has already announced several contemplated reductions in governmental expenditures.

Refractories Shipments Gained in October

Reflecting largely the continued improvement in the iron and steel industry, shipments of clay fire and silica brick showed further increases in October as compared with the month before. The gain was a matter of between 6 and 7 per cent in clay fire brick shipments and of more than 14 per cent in silica brick deliveries. Production of clay fire brick last month mounted rather more sharply than shipment or sales, however, and that development resulted in a less favorable statistical position with respect to stocks at the end of October than one month before. Total stocks as of Oct. 31 showed a gain over those at the end of September of 3,428,085 9-in. equivalents and "free" stocks, those which might be applied against new business, were almost 7,000,000 9-in. equivalents greater at the end of October than a month before. The increase in the production of silica brick was less than that in shipments and as orders ran well ahead of production, there was a lighter total stock of this grade at the end of October than one month before.

Figures in 9-in. equivalents, for October and September, figures in parentheses being the percentages to monthly economical producing capacity of those reporting, follow:

Clay Fire Brick

	October		September	
Capacity reporting....	51,948,967		51,728,967	
Stock first of month..	149,586,979	(287)	150,172,613	(290)
Production	38,261,078	(73)	31,887,196	(62)
Shipments	35,679,837	(69)	33,319,674	(64)
Stock end of month...	152,168,220	(292)	148,740,135	(287)
New orders	33,764,853	(65)	31,718,900	(61)
Cancellations	353,300	(1)	478,711	(1)
Net new business.....	33,411,553	(64)	31,240,189	(60)
Unfilled orders.....	36,724,960	(71)	38,719,644	(75)

Silica Brick

Capacity reporting ...	8,019,667		8,019,667	
Stock first of month..	10,975,715	(136)	11,734,496	(146)
Production	3,237,936	(40)	2,850,238	(35)
Shipments	4,186,605	(53)	3,608,719	(45)
Stock end of month...	10,027,046	(124)	10,975,715	(126)
New orders	4,055,753	(50)	2,748,149	(34)
Cancellations	19,578	(0)	1,565	(0)
Net new business....	4,036,175	(50)	2,746,584	(34)
Unfilled orders	3,131,880	(39)	3,282,310	(41)

Free Stocks

Fire clay brick.....	75,216,901	68,504,557
Silica brick	4,056,089	3,937,977

Secretary Hoover's Decision

WASHINGTON, Nov. 25.—Persistent reports that Secretary of Commerce Herbert Hoover would retire from the Cabinet on March 4 to accept one of the numerous flattering offers from the business world were laid at rest last week, when it was stated from a source considered authoritative that it is the intention of Mr. Hoover to remain in the Government service.

A great deal of interest also was manifested in the statement of President John L. Lewis, of the United Mine Workers, that he was not a "candidate" for the portfolio of the Secretary of Labor. It had been reported that President Coolidge was contemplating the appointment of Mr. Lewis to this post. While the statement of Mr. Lewis was not accepted as proof that he would decline the position, if offered to him, it was taken to mean that he is not personally encouraging his own appointment.

Meetings of Mechanical Engineers

Included among meetings to be held in December by various sections of the American Society of Mechanical Engineers are the following:

Baltimore, Dec. 10—Higher Boiler Pressures for Steam Locomotives, by C. T. Carroll, general superintendent motive power, Baltimore & Ohio Railroad.

Boston, Dec. 11—At the Engineers' Club, The Gas Turbine, illustrated with lantern slides, by Prof. L. S. Marks, Harvard Engineering School.

Buffalo, Dec. 9—At Engineering Society of Buffalo rooms, Hotel Statler. Machine Tools and Shop Efficiency, illustrated, by L. D. Burlingame, Brown & Sharpe Mfg. Co., Providence, R. I.

Cincinnati, Dec. 11—At Literary Club rooms. Reminiscences of Twelve Years' Engineering Experience in the Near East, by Prof. L. A. Scipio, dean of engineering Robert College, Constantinople.

Cleveland, Dec. 8—At Hotel Winton. Materials Handling by Machinery, by E. T. Dunnington, Cleveland Crane & Engineering Co.

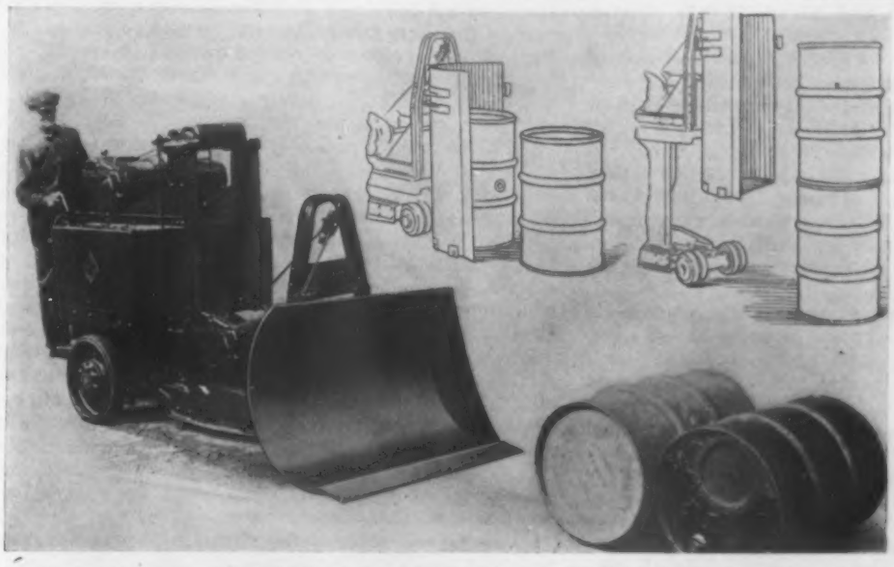
Hartford, Dec. 3—At Hartford Engineers' Club. Address by Ralph E. Flanders, manager of Jones & Lamson Machine Co., Springfield, Vt. Dec. 16—What the Technical Press Means to the Engineer, by Fred R. Low, president American Society of Mechanical Engineers.

Electric Truck Stacks Bulky Loads

An electric elevating "tructor" arranged for transporting and stacking bulky cylindrical and rectangular loads which are handled on a revolving cradle attached to the front of the elevating platform has been brought out by the Elwell-Parker Electric Co., Cleveland.

The machine is designed for handling bundled steel, barrels, and a variety of other loads in the form of rolls, bales, boxes, etc. It picks up its load automatically in any position and stacks it either vertically or horizontally as desired. The elevator raises the lower end of the load to a height of 6 ft. so that material up to 6 ft. high may be stacked end on end to a height of 12 ft. above the floor. The machine consists of an elevating tructor with a revolving apron or cradle, built in a form to suit the requirements, located at the end of the platform, as shown in the accompanying illustrations. The load is raised or lowered by operating the elevating platform while the cradle is revolved in any position from the vertical to the horizontal by means of an additional hoisting unit. The two hoisting units for operating the elevator and revolving the cradle are standardized with interchangeable parts. Power is supplied from one central storage battery with individual controllers for the lifting, revolving and driving mechanisms.

The two dual compensating wheels provided at the end nearest the load are emphasized as permitting the use of a wider tread and the employment of larger bearings. The company's standard safety devices are installed together with devices covering the new operation. One of these causes the elevating motor to stop instantly in case the elevating cable strikes an obstruction and slackens while lowering the load. One man operates the tructor and from the operatnig position has a clear vision of the forward part of the unit.



Loads are Handled on the Revolving Cradle at the Front of the Elevating Platform. The material may be picked up in any position and stacked horizontally or vertically, as shown

Steel Companies Storing Coal

YOUNGSTOWN, Nov. 25.—Independent steel companies in this district are building up ample fuel reserves, to fortify themselves against any possible interruption to transportation during the winter months. Unless unforeseen circumstances arise, however, trunk line carriers serving the mills in this territory believe they will be able to handle the growing volume of inbound and outbound tonnage expeditiously and with little interference because of weather conditions.

The Sheet & Tube company is operating its coal mines in western Pennsylvania at Nemacolin, Pa., and Brier Hill, Pa., at a normal rate, while the Republic Iron & Steel Co. has reopened its Republic mine, after an idleness of more than a year.

Contemplated Blast Furnace for California

It is expected that within a short time application will be made for a charter under the laws of Delaware for the Pacific Steel Corporation to be organized for the purpose of building a modern blast furnace at Long Beach, Cal., and possibly by-product coke ovens to make coke for the new furnace. While plans are now far from being fully matured, it is understood that officials of the Pacific Coast Steel Co. operating open-hearth steel plants at Seattle and South San Francisco, together with finishing mills at both plants, are largely interested in the new project, this company having been working for several years on a projected blast furnace to be built either in Washington or in California. The company uses a considerable tonnage of pig iron at both of its steel plants and has strongly felt the need of its own supply. At its two steel plants the Pacific Coast Steel Co. uses mostly scrap in the open-hearth furnaces, this averaging about 85 per cent, but the high cost of securing the pig iron it uses has caused the company to take up very recently and actively the matter of making its own pig iron. While it would not likely for some time be able to use the entire output of a furnace, it believes a ready market could be found for the surplus product.

If plans for the proposed furnace should go through, it is expected that foreign ores would be used, and it is understood that a recent investigation of the question of getting such ores has been made with satisfactory results. In the matter of coal supply for the by-product ovens that would probably be built in connection with the furnace, the company has secured options on some large coal lands at Carbonado, Wash., about 30 miles from Seattle, which exhaustive tests have shown is of coke making quality. This coal could be hauled to Seattle at a low cost by rail, and then at a further low cost to Long Beach by water.

While many intricate problems remain to be worked out, it is said that the chances for this blast furnace project going through are fairly favorable. In case it should be decided to build the furnace, it is likely that large additions would be made at both steel plants of the Pacific Coast Steel Co., at Seattle and South San Francisco. However, definite decision in the matter may not be reached for some months.

The General American Tank Car Corporation, East Chicago, Ind., has ordered the immediate reopening of its No. 2 plant at Hammond, Ind., with intention of gradually advancing production to a maximum basis. The wood car erection department at the same works will also resume production, following a shut down for a number of weeks.

STEEL OUTLOOK BRIGHT

Opinions Voiced at Meeting of Steel Jobbers' Association

In connection with the regular fall meeting of the executive committee of the American Iron, Steel and Heavy Hardware Association at the Plaza Hotel, New York, a luncheon was held on Nov. 21. President C. R. Williams of the Williams Hardware Co., Minneapolis, presided at the luncheon and brief addresses were made by Charles C. Cluff, manager of sales in New York for the Carnegie, Illinois and Tennessee Coal, Iron & Railroad companies; William W. Macon, managing editor of THE IRON AGE; Charles O. Hadly, Alan-Wood Iron & Steel Co., Philadelphia, and Severn P. Ker, Sharon Steel Hoop Co., Sharon, Pa.

Mr. Cluff emphasized in part the poor methods of selling which had been altogether too common for some time among representatives of steel companies, (a view which seemed to be in harmony with the opinions of others present) and discussed also the outlook, believing that we were in for good business for some time to come and that prices had risen from the bottom. He pointed out that mill deliveries were being extended and mentioned specific cases of railroad ordering as indicating the firm and promising character of the demand.

Mr. Hadly believed that we were in for remarkable prosperity and happiness for one or two years at least. After discussing the dislocation of the steel plate market with respect to the considerable spread between plate prices and those of bars and shapes in recent months, particularly as against the showing of a spread of barely $1 among these tonnage products over a long term of years, he told of the careful consideration by his company of its requirements in the way of ore and other material for the future and its decision to go ahead on a large program.

Mr. Ker emphasized that it is hurtful to all concerned, buyer as well as seller, when business is done at abnormally low prices or at less than a fair return to the producer. He hoped that we were not now entering upon a period of boom. "We are not approaching a period of good times," he said, "we are in it now." He discussed the volume of actual specifications against his own mill capacity and said that it was running parallel to that of a large manufacturer whose books he had been allowed to examine. Since Monday, Nov. 10, there was no day on which less than 140 per cent of full daily production was not received in the shape of definite orders. Some days demand represented three times the daily output, and the average was twice or a little more.

In referring to prices which have obtained for some time, he admitted that the buyer is not to blame but there was the need of selling on something other than the basis of price. How unsatisfactory has been the business of this year is well indicated, he pointed out, in the showing of the quarterly and semi-annual reports of some steel companies. He pictured the next year or two in glowing terms. Incidentally, he told the members of the association that not only would they pay on the basis of 2.25c., Pittsburgh, for steel bars in the early future, but they would be glad to pay it; and that price was needed to make a profit. If the situation were held in check, there would be nothing to fear, as of an inverted pyramid, even with a world now ready to buy.

He reiterated a prophecy made at a meeting of the association three years ago that by 1930 we would be producing at the rate of 60 millions of tons of ingots and castings. Then we would have a population of 120,000,000 people, our per capita consumption would be in excess of 1000 lb. per annum. He referred to several developments to indicate the increasing consumption of steel, such as the growing popularity of steel furniture, the increasing use of steel in automobile construction and even such a matter as the use of metal lath in residence as well as building construction, claiming that even were metal lath used in only one out of ten structures today, the demand would be fully equal to the capacity of the metal lath producing plants. "The sunshine of prosperity is now on us," he said, and he asserted that we could count on it for a period of not less than two years.

Mr. Macon discussed the situation abroad, pointing out that while any penetration of the United States with foreign steel and iron would be for no great length of time nor of any great magnitude, more concern should be felt over importations from French, Belgian and Luxemburg sources than over importation from Germany. He referred to the movement looking to an international understanding among European iron masters, pointing out the conditions affecting participation by the producers of the leading nations.

Production Slowly Increasing in the Mahoning Valley

YOUNGSTOWN, Nov. 25.—Iron and steel production in the Mahoning Valley is on the ascendant. The Youngstown Sheet & Tube Co. is preparing No. 2 blast furnace in its group at Hubbard, Trumbull county, for lighting. The two stacks in this group have been inactive since last spring. The company has also started the last idle complement of by-product coke ovens at its Brier Hill works, storing part of the surplus coke production pending the operation of another blast furnace at the Brier Hill works.

The Republic Iron & Steel Co. has added two more open-hearth furnaces to its active units, for a total of 13. The Trumbull Steel Co. has added to its active rolling mills.

With its Hubbard stack in blast, the Sheet & Tube company will have nine of 17 blast furnaces in action, including six in the Youngstown area and three at Chicago. Indications are it will light additional furnaces in the Chicago district at an early date. With the proposed resumption, there will be 25 active blast furnaces of 45, in the Youngstown district. This compares with a low production rate of 12 stacks active last July.

Steel ingot production this week in the Mahoning Valley is at the highest point since last April, with 37 independent open-hearth furnaces melting, against 34 the preceding week. Steel Corporation subsidiaries in this territory are maintaining steel output at an 80 per cent average.

The Republic company has added two light bar mills and its 14-16 in. mill to the units already in commission, giving it five active merchant bar mills. The Sheet & Tube company is operating its 9-in. and 12-in. bar mills.

Of 38 independent tin mills in this area, 29 are rolling, a gain of six as compared with last week, made by the Trumbull Steel Co. Steel Corporation subsidiary tin mill operations are being carried forward at 75 per cent in this district.

Strip and puddle mill operations approach near-capacity.

Of the active blast furnaces, only four may be classed as merchant stacks, all in the Shenango Valley, two furnaces of the Shenango Furnace Co., Claire furnace and a stack of the Sharpsville Furnace Co.

Valley independents are maintaining ingot and rolling mill output on the following basis—Sheet & Tube company, 80 per cent; Republic company, 70 per cent; Trumbull company, 95 per cent; Sharon Steel Hoop Co. and Carnegie Steel Co., close to 100 per cent.

Of 127 sheet and jobbing mills in the Mahoning Valley, 89 were scheduled to begin the week, with the probabilities that the number would be increased before the end of the period.

The Carnegie company has started an additional open-hearth furnace at its Farrell, Pa., works, for a total of 10, its best record in many months.

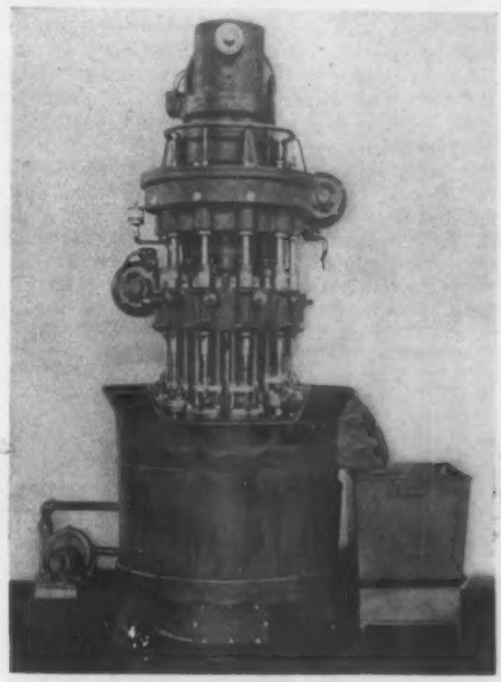
After a shutdown since July, last, the Smith & Wesson Firearms Co., Springfield, Mass., resumed operations Nov. 17 at 85 per cent of capacity. By the end of another week the management expects to be operating the plant full.

High Production Continuous Rotary Drill

An output of 35 nuts per minute, the drilled hole being ½ in. in diameter and the depth 1 in., is claimed for the 10-spindle continuous rotary drilling machine here illustrated, built by the Langelier Mfg. Co., Arlington, R. I.

The machine was designed primarily for drilling the hole in collar hexagon nuts used on the hub of automobile disk wheels, but may be arranged conveniently for drilling other work. The nut, of screw stock, is cold pressed hexagon blanks. High speed drills operating at 1200 r.p.m. with a cut of 0.0045 in. are employed and cutting lubricant is used while drilling.

The machine is made up of a stationary heavy round post mounted on a base. A circular carrier



Automatic Gripping and Ejecting of Nuts Are Features of New Multiple-Spindle Drill

equipped with 10 drilling spindles with their respective work-table and actuating mechanisms revolves around the post. The carrier revolves on lubricated loose perforated bushings and the weight of carrier is supported on a heavy ball bearing. A ball thrust bearing is provided also at the top end of post to counteract the cutting thrust of drills. The carrier is supported at its top end by a heavy trunnion which revolves in a bearing having a loose perforated lubricating bushing. This top bearing is attached to a rectangular box type standard that is bolted to the bed at the rear of the machine.

The carrier is revolved by a 1 hp. motor attached to the right side of the standard and is connected by belt to an inclosed gear case inside of the base at the rear. The lower shaft in the gear case carries a bevel pinion which drives the large ring bevel gear that surrounds the lower end of the carrier and drives it. The carrier runs at 3⅓ r.p.m.

The drilling spindles are driven through spur and bevel gearing by a 15 hp. motor mounted on top of the machine. The spur and bevel gears are inclosed and run in oil. The drilling spindles run in sleeves that can be clamped and adjusted vertically to the desired drilling position. This facilitates the putting in and taking out of drills without disturbing the work locating mechanism. The sleeves have phosphor-bronze bushings.

The cutting feed to the work tables is obtained by cam rolls fulcrumed in the lower end of cam blocks running on a circular stationary edge ring cam that is attached to the top of the bed under the carrier. The cam has a pause to give time for the operation to load. It has a total feed rise of 2¼ in; 1⅛ in. for cutting feed and 1⅛ in. for quick drop of table to give space in locating fixture to insert the work.

The work locating fixture consists of a plain circular disk screwed to the top of the work table. A floating U-block prevents the nut from turning while drilling and the floating feature allows the nut to centralize itself with the drill guiding bushing. The drill guide plate that carries the drill guide bushing is hung between two vertical pilot rods that are free to slide up and down according to the rise of the cam in bearings in the upper part of the carrier and in guide bushings that are driven into the work locating fixture. The pilot rods are held down in the down position by heavy compression springs, the action of these springs supplying the pressure required to centralize the work.

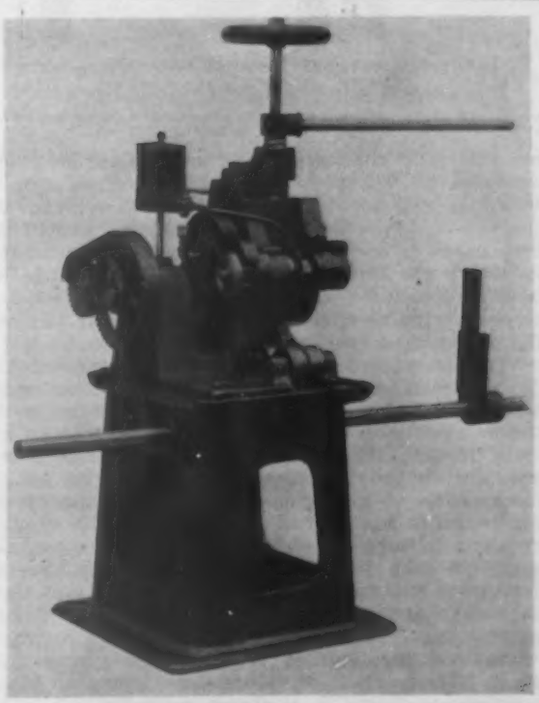
Locating and holding of nuts in the fixture is automatic, the operator being required only to slide a blank nut approximately in position into each of the fixtures as they pass by. The ejecting of the nuts is automatic, this being accomplished by a thin bell crank lever attached to each fixture.

Pipe Cutter Equipped with Length Gage

A length-measuring gage has been added as a feature of the rolling cutter illustrated, which is a product of the Bignall & Keeler Machine Works, Edwardsville, Ill.

The machine, which is designated as the No. 4, is designed to cut off pipe or tubing from ¼ to 4 in. in diameter. The length-measuring gage permits the operator to cut duplicate lengths of pipe without the necessity of measuring each piece.

The cutting is accomplished by lowering the cutter, which permits the pipe to bear evenly across the rolls.



Gage Shaft Furnished with Tube Cutter Will Cut 8 Ft. Long. Larger shafts may be used

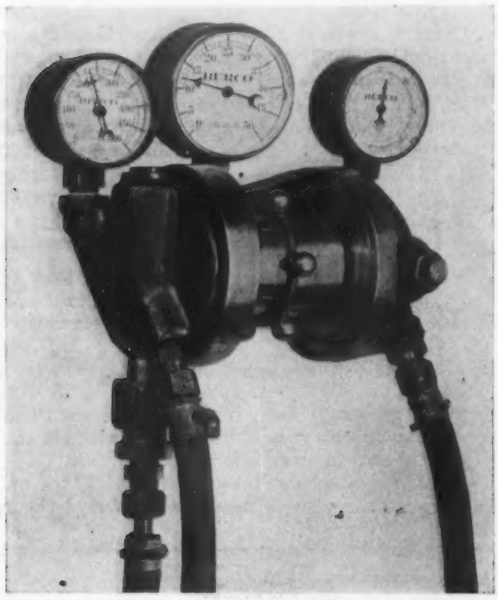
The cutter is adjusted by means of the handwheel until it just clears the pipe; then by using the lever which terminates in a nut having a coarse pitch thread, the cutter may be quickly raised and lowered. The rolls are mounted in roller bearings and the cutter shaft is equipped with two bearings with bronze bushings.

The floor space occupied by the machine, without the length gage, is 23 x 25 in., and the weight is approximately 750 lb.

Safety Two-Gas Welding Regulator

A safety automatic equal-pressure two-gas regulator with one hand control, relieving the operator from making numerous pressure adjustments, has been developed recently by the Burdett Mfg. Co., 309 St. Johns Court, Chicago.

In this device equal pressures are produced in the oxygen and acetylene hose lines leading from the regulator to the torch by means of a single adjusting wheel. In preventing mixed gases in either hose length, by producing equal pressures automatically, hose fires, hose explosions and the burning out of regular seats



Safety Equal-Pressure Two-Gas Welding Regulator With One Hand Control

are said to be eliminated. The uniform gas pressures delivered to the torch are said to produce a more tenacious and well-balanced welding flame, and the time saved by having a single handwheel controlling both gases in one regulator is a feature emphasized. In the device illustrated, torch pressure readings for both gases may be obtained from a glance at the center gage; the acetylene tank gage is at the left and the oxygen tank pressure gage at the right.

The two gases do not mix in the regulator, but flow independently until after they pass the valves in the torch, and reach the point of mixture either in the handle head or in the tips. When turned with an upward motion, the handwheel will bring an equal pressure on the two controlling diaphragms by the compression of a single spring. The thrust of the handwheel is against ball bearings, and little effort is required to turn the control. Unequal oxygen and acetylene tank pressures are controlled by the gas flow areas and resistance and it is claimed that there is always ample volume of both gases for welding operations. The regulator may be used for cutting when the oxygen pressure required is not greater than 40 lb. This permits of cutting steel billets up to approximately 3 in. in thickness with the company's cutting or combination torch.

Steel barrels produced during October are reported by the Department of Commerce at 447,900, based on reports of 30 establishments operating 35 plants. This is the largest figure for any month of this year, being a heavy increase over the 385,212 for September. Shipments likewise were the heaviest of the year, at 442,569, compared with 389,064 in September. Unfilled orders at the end of the month are given as 682,533, a sharp reduction from the unfilled orders at the end of September, amounting to 905,870.

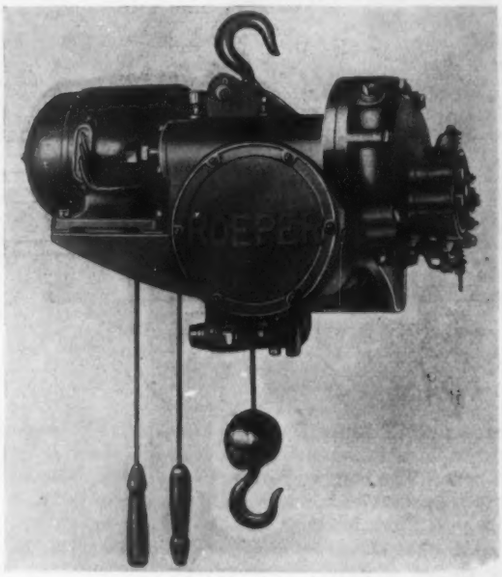
Military Maps and Mapping

In connection with the Brazilian Centennial Exposition at Rio de Janeiro in 1922-23, the United States War Department cooperated with the Department of the Interior in an exhibit of military maps and methods of making them. A 48-page pamphlet on the subject, just issued by the Department of the Interior and published in both Portuguese and English, with numerous illustrations, shows details of the work. In particular it gives the methods of depicting on the map the various differences of elevation, locations of railroads, streams, buildings and the various other things which go to make up a map on large or small scale. The pamphlet is printed in several colors to show the way the completed maps are turned out.

Electric Hoist of Simple Design

Few parts and rugged construction are features claimed for the electric hoist illustrated, which has been recently added to the line of the Roeper Crane & Hoist Works, Inc., Reading, Pa. The machine is designated as the type R and is available in capacities from 500 to 4000 lb., inclusive.

The hoist is worm geared. The worm is placed above the gear to reduce wear and the worm shift is equipped with a ball end-thrust bearing. The motor which is of standard design for hoist service, is mounted directly upon an extension of the hoist frame, as shown. The main frame is a one-piece casting that contains all bearings so that shafts and moving parts



The Hoist Is Available in Capacities from 500 to 4000 Lb. Few parts and rugged construction are features

are kept in alinement. Steel suspension plates, reaching from the drum shaft to the overhead suspension members, are intended to relieve the castings of tension, and provide the means for hook, link, clevis or other suspension.

An automatic stop of the trip-lever type, with top and bottom limits, is provided and may be adjusted for distance by hook travel. The worm gear drive eliminates the necessity of a load brake. The motor is equipped with a mechanically operated jaw brake acting in conjunction with the controller, which brings the motor to a quick stop and prevents drifting of the load when power is cut off. Controllers are of the single-speed drum type of standard design. Push button control can be provided and for this control the motor is equipped with an electric magnetic brake and an adjustable upper and lower electric limit switch.

Moving parts of the hoist are entirely inclosed and operate in a bath of heavy oil or grease.

Commends Many Trade Associations

Secretary Hoover Makes Strong Plea for Legitimate Organization of Business—Much Constructive Work Could Be Done

WASHINGTON, Nov. 25.—Treating elimination of national waste as the keynote, Secretary of Commerce Hoover in his annual report emphasizes the important part of legitimate trade association activities to this end. He takes occasion again to urge that some definition should be made by which assurance of legality of trade associations in proper conduct can be had and by which illegality of improper conduct may be more vigorously attacked. He points out that it is true that a small minority of trade associations have been in the past used as cloaks for restraint of trade by such activities as open-price associations and other attempts to control distribution of prices. It is equally true, he says, that the vast majority of trade associations have no such purposes and do no such things.

"The dividing line, however," Mr. Hoover points out, "between what activities are in the public interest and what are not in the public interest is not today clearly defined either by the law or by court decision. In consequence of recent decisions of the courts, many associations are fearful of proceeding with work of vital public importance, and we are losing the value of much admirable activity. At the same time, we are keeping alive the possibility of wrongful acts."

The Secretary declares that legislative definitions for activities of the farmer and the laborer have been given as they affect labor organizations and cooperative organizations of farmers, and he asserts that he is convinced that the time has come when definition should be extended to those engaged in industry, trade and commerce, particularly in the interest of maintaining the small business unit.

Use of Smoke Screens

The department, he points out, has made definite proposals in this direction which it believes in no way opens the door for illegal activities, and yet makes ample provision for the maintenance of these activities which it is in the public interest to encourage.

In the course of his contention for trade associations, Mr. Hoover says:

"Any collective activity can be used as a smoke screen to cover conspiracy against the public interest, but that is no reason for condemning all collective activities. Just because automobiles are sometimes used by bootleggers for the illegal transportation of liquor, we do not prohibit their manufacture or their legitimate use. Probably the most compelling reason for maintaining proper trade associations lies in the fact that through them small business is given facilities more or less equivalent to those which big business can accumulate for itself.

"Properly directed, this kind of activity is one of the strongest forces for the maintenance of competitive action. No one would advocate any amendment to the law that would sooner or later create monopoly, price fixing, domination or unfair practices, or any of the category of collective action detrimental to public interest. There is a vast difference between the whole social conception of capital combinations against public interest and cooperative organization profoundly in public interest. The former extinguishes individualism, legitimizes and fosters monopoly, dams up our economic channels, all of which penalize the consumer and make for less efficiency in production. The latter encourages individualism, fosters competition and initiative, resulting in efficient service and reasonable prices to the consumer."

Elimination of Waste

Taking up the constructive character of trade associations in eliminating waste, and declaring that they will be even far more constructive if a solution can be found for determining their legality, Mr. Hoover says their waste elimination activities extend in many directions, of which the following are but a part:

Collection and distribution of statistics as to actual production, capacity production, stocks on hand, shipments, orders on hand, cancellations, number of employees, and such other data as will enable the industry and its consumers intelligently to judge future demands and supply.

Elimination of waste and reductions in cost of production and distribution by standardizing sizes and types, eliminating excess varieties and establishing grades and qualities, thus reducing the amount of stocks thrust upon the retailer and at the same time enabling factories to operate more regularly to stocks of standard requirements.

Elimination of misdirected credit and aid in the collection of accounts.

Provision for the settlement of trade disputes by arbitration.

Stamping out of unfair practices and misrepresentation in business or as to goods.

Promotion of the welfare of employees, by the improvement of working conditions, sanitation, safety appliances, accident prevention, housing conditions and matters of like character.

Economy in insurance by handling that of all members, including fire, industrial, indemnity or group insurance.

Economies in transportation through common agencies for settlement of rate matters, classification, car supply, auditing transportation bills and the study of competitive transportation agencies.

Elimination of waste in processes by the establishment of laboratories for technical and scientific research.

Strange Objections of Manufacturers

The Director of the Bureau of the Census, Department of Commerce, as pointed out in THE IRON AGE of last week, has recommended legislation authorizing him to collect and publish monthly figures concerning current industrial and business statistics. The Director stated that in the compilation of reports for some industries serious difficulties arise from the refusal of a few establishments to supply the data needed by the bureau. The refusal of one manufacturer was due, he said, according to the manufacturer's statement, to his displeasure with the attitude of Congress toward certain proposed legislation. Another declared that the census figures have been used by wholesale houses as a club against manufacturers. A few manufacturers asserted they found the census reports of no value and claimed that it took an unreasonable amount of time and involved more or less inconvenience to supply the data.

At this point the Director says: "As a matter of fact, these claims are not justified. To the great majority of the important establishments in the various industries which the bureau canvasses at monthly or other frequent intervals, the census figures are of real and unquestioned value. The president of one very large manufacturing establishment stated that the bureau's monthly reports were an important subject of discussion at directors' meetings. In general, those manufacturers who produce the bulk of the output in the industries covered by the special inquiries are able to make good use of the census reports."

Why Inquiries Were Undertaken

At another point the Director states:

"I desire to make it clear that it was on the initiative, not of the Census Bureau, but of industrial organizations, that the various special inquiries were undertaken. The bureau has not sought the extra work, but is performing it as a service to the industries represented by these organizations. Thus the refusal of certain manufacturers to cooperate is detrimental to

the interests of industries in which they are engaged."

In his recommendations Secretary Hoover again urges that all of the functions of the Government should be at once centered in three different groups, industry, trade and navigation, and suggests that each be under an assistant secretary. The Secretary also again urges legislation for tax exemption of Americans engaged in business abroad.

Taxing Citizens Abroad

"The United States is the only important nation which imposes domestic taxation upon the earned income of its citizens who are resident abroad, engaged in the expansion of commerce. While provision is made for deduction of foreign taxes, this has effect only in high-taxation countries, and affords no adequate relief precisely in those areas where we need expansion in personnel most, as in Latin America and the Far East. All other high-tax countries have given complete relief in this particular, and thus our nationals are placed at great disadvantage in the countries mentioned above.

"We shall have neither a staple export business in manufactured goods, nor a successful merchant marine, so long as the distribution of American goods rests in the hands of other nations. The marketing of American goods abroad is a matter of ability and zeal in representation, as well as of competitive prices. The effect of increased taxation from the war, which is applied by our country alone to earned incomes of our citizens abroad, tends to drive our citizens out of the front line of commerce in many countries. Legislation should be enacted to relieve our nationals from this burden. This suggestion is not intended to be applicable to returns on foreign investments of residents or of non-residents, or to relieve expatriates, but solely to place those engaged in advancing American trade abroad upon terms of equality with others."

In urging passage of a Senate bill to establish foreign trade zones in ports of the United States, Secretary Hoover says, "Their most important purpose would be in contribution to our merchant marine in increasing the volume of carriage in American bottoms."

ACTIVE BUILDING AT SEATTLE

Predicted That Foreign Competition Will Check Advance of Domestic Prices

SEATTLE, Nov. 20.—Local conditions in the steel trade are little, if any, better as a result of the recent election, the only exception being that there is more iuquiry, but without any appreciable increase in number of orders being placed. The feeling here is that there will not be much betterment until after inventory is taken, this being only three or four weeks distant. There is always a slowing down in orders just prior to the end of the year, and while stocks are low, jobbers want to know just what they need before ordering shipments from the mills. The retail dealer is also a small buyer in the last month of the year, and while his stocks are also low, he will not do much until after Jan. 1. It is said that stock taking this year will reveal the smallest quantities of goods on hand in some years. It has been hand to mouth buying since the early part of the year, prices having shown marked recession.

Best Year for Building

The present year in every way is the best that Seattle has ever known, especially in the erection of new buildings, and the outlook is that 1925 will also be active. The new Hotel Olympic is completed, is now being furnished and will be opened to guests early in December. It cost over $4,000,000 to build, while fixtures will cost about $500,000. Contracts were placed in the past week for an addition to a local hospital to cost about $500,000, also for a new bank building to cost about $300,000.

The announcement that the Pacific Coast Steel Co. may build a blast furnace to make its own pig iron is of interest to local steel consumers who have been using the products of this company for many years, but disappointment is felt over the decision of the company to locate the new furnace in California, provided it is decided to build it.

Foreign Competition Active

Prices of finished steel products are a shade firmer, and Eastern mills are sending instructions to their local representatives to urge their customers to get under cover, as they look for higher prices before long. It will be very difficult for the Eastern mills to get any higher figures here; rather they face the situation of losing some of their local trade, due to the fact that importations of foreign steel into Seattle, Portland, Los Angeles and San Francisco are steadily increasing, prices being below what Eastern mills are asking for delivery in this market. Recently, a local hardware jobbing house imported from 300 to 400 tons of plates, shapes and steel bars into Seattle, prices being about 1.90c. for the plates and shapes, and not above 1.80c. for the bars. These prices figure back to about 1.19c., Pittsburgh, for the plates and shapes, and about 1.09c. for the bars. A local importer and machinery dealer brought in several months ago about 500 tons of plates and bars from Germany, and is reported to have a larger shipment on the way now. These importations of finished steel products are giving local sales representatives of Eastern steel mills some concern, they now taking the view that trade of Eastern mills in Seattle, and in other coast cities, may grow less instead of larger.

Low Prices on Shapes

Inquiry for structural steel is quiet, with low prices being quoted on the small amount of work being placed. The American Bridge Co. is the low bidder on nearly 4000 tons for the Government railroad in Alaska, but the award has not yet been made. Some local bridge work is coming up requiring about 500 tons of shapes and 300 tons of reinforcing steel bars. A highway bridge in Pierce County, about 450 tons, is ready for bids. Eastern shapes are ruling at 2.35c. to 2.40c. for Seattle delivery. As noted above, some foreign shapes have been laid down in Seattle at not above 1.90c., and further shipments are on the way.

Two large inquiries for tin plate for first quarter delivery from local canneries are in the market, and will be closed in a few days, the price to be that fixed by the leading tin plate interest. It is the belief here that the present price of $5.50 per base box will be reaffirmed for first half of next year. There is no foreign inquiry here.

Will Manufacture Galvanized Sheets

The Dominion Sheet Metal Corporation, Ltd., Hamilton, Ont., announces that plans have been completed for the establishing of a plant in Montreal, Que., for the manufacture of galvanized sheets. Building operations will be started at an early date and it is proposed to have the plant in operation early next year. In connection with the plant it is proposed to use British steel together with Canadian labor, chemicals, zinc and other Canadian materials. The announcement is made as a result of a recent trip to England by A. T. Enlow, president of the Dominion Sheet Metal Corporation, Ltd., at which time an alliance was entered into between John Lysaght, Ltd., the largest producers of black and galvanized sheets in England. It has also been reported that additional equipment will be installed in the Hamilton, Ont., plant of the Dominion Sheet Metal Corporation, so as to increase the output of that plant to take care of the increasing demands of the Canadian market.

Precision Lathe of Swiss Design

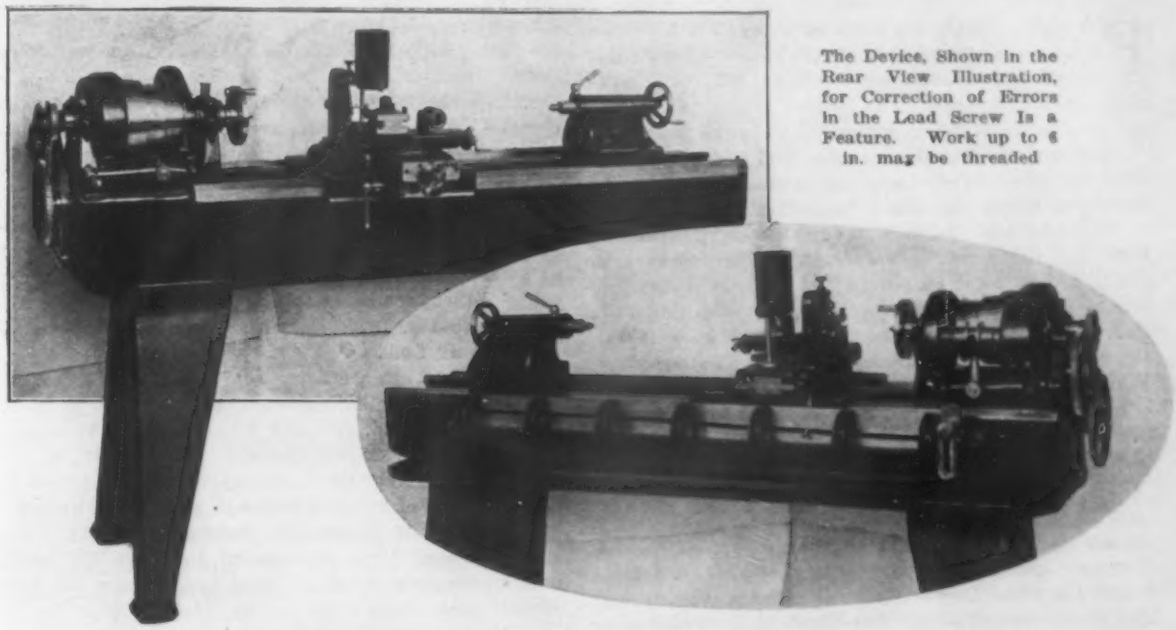
A device for the automatic correction of errors of the lead screw and correction for temperature is an outstanding feature of the precision thread cutting lathe illustrated, which has been developed recently by the Société Genevoise d'Instrument de Physique, Geneva, Switzerland. The machine is designated as the No. 6 and is being marketed in America by the R. Y. Ferner Co., Washington, D. C.

Work up to 6 in. in diameter may be threaded, and the greatest distance between centers is 43 in. The lead screw of the machine has five threads to the inch. Change gears provide for 36 different pitches ranging from 4.5 to 100 threads per in. and for 20 metric pitches from 0.25 to 5 mm. The accuracy of the threaded length of lead screws produced on the lathe is guaranteed to be within plus or minus 0.0002 in.

The arrangement of the correcting device may be noted from the rear view illustration. It consists of a long curved slot through which a pin on an extension from the nut passes. As the carriage advances this pin, in following the contour of the slot, advances or retards the movement of the carriage slightly to correct for the observed errors of the lead screw. The framework of the corrector bar is pivoted at the left end and has at the right end a graduation by which it may be set to give any desired standard temperature correction for the construction of a screw on the machine. Tilting this framework out of its horizontal position gives a uniform increment or decrement to the movement of the carriage as it passes along the ways.

Six working speeds from 12 to 50 r.p.m. and return speeds of four times these amounts are obtainable. The longitudinal slide is provided with a holder for the mounting of a comparator tube for checking work in progress. Both internal and external thread cutting may be done, and the tool slide provides for the withdrawal of the tool in either direction without the necessity of changing the adjustment of the tool holder. Graduated heads are provided for the two slides and a graduated circle for setting the revolving tool holder. A transverse adjustment of the tailstock is also provided.

The length of the lathe is 76 in. The weight is 900 lb. net.



The Device, Shown in the Rear View Illustration, for Correction of Errors in the Lead Screw Is a Feature. Work up to 6 in. may be threaded

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Publicity Policy of the Youngstown Sheet & Tube Co.

Next year the Youngstown Sheet & Tube Co., second largest independent iron and steel producing interest in the country, will celebrate the twenty-fifth anniversary of its founding. R. J. Kaylor, manager of the company's publicity and advertising department, in addressing the Youngstown Advertising Club recently, related some of the problems confronting the steel industry from the publicity viewpoint, as encountered in the experience of the company.

"No inconsiderable part of our program," said Mr. Kaylor, "is in the publication of a bulletin for employees, which we issue once each month. Most of the matter contained in this bulletin is furnished by the employees themselves, and receives no more editorial supervision than is necessary to correct spelling and grammar. We believe this bulletin has done much to promote more harmonious relations between the management and the workers, to acquaint officials and employees with their mutual problems, to present differing viewpoints, and above all, it has emphasized that our officials, charged with management, are human, just like the humblest employee, and that their problems are much the same in kind, if not in degree of importance."

Mr. Kaylor stated that the publications chosen for the company's advertising are largely limited to the trade paper field, and are carefully selected. The company publishes a calendar each year, showing views in colors of various manufacturing processes in iron and steel production, and last year issued 20,000 copies of this calendar, which was sent to all parts of the world. Officials represent the company at numerous trade conventions and gatherings. The publicity department has prepared an explanatory talk on production processes, with 100 lantern slides in colors, and this talk has been given before leading civic and trade bodies in all parts of the country.

The company has what is believed to be the best developed photographic department of any independent steel interest in the country, employing a full-time expert photographer who works in cooperation with and under the advertising department.

Walter E. Meub, secretary Youngstown Sheet & Tube Co., last week addressed a meeting of the Foremen's Club of the Mahoning Valley, Youngstown, stating that the foremen, who come in direct contact with the workers, are among the most important links in the management. Mr. Meub pointed out that a right spirit on the part of the men resulted in broader production and lower costs, whereas dissatisfaction reduced output and increased costs per ton of production.

European Market Improvement Grows

Continent Shows Strong Tone—German Situation Is Much Better and Orders Are Being Refused—British Export Business Poor—France and Belgium Gain

(*By Cable*)

LONDON, ENGLAND, Nov. 25.

PIG iron is steady but business is considerably more quiet, as export demand is still poor. America has bought some East Coast hematite, but stocks generally are still large. The outlook is not too bright, but producers are fairly optimistic as to the future.

Foreign ore demand has improved and there have been increased sales, including substantial contracts. Sellers of Bilbao Rubio ask 22s. ($5.08), ex-ship Tees.

Finished steel is dull, though inquiry, especially from the Continent, is broadening. The works generally are in want of orders, but are not inclined to reduce prices. The Barrow Hematite Steel Co., Ltd., Barrow-in-Furness, is restarting its mills on a 10,000-ton rail order for New Zealand. Sir W. G. Armstrong, Whitworth & Co., Ltd., Newcastle-on-Tyne, has secured a contract, amounting to £80,000, for bridge material for the George River, New South Wales.

Sheets and Tin Plate

Tin plate bars have been reduced 5s. to £8 7s. 6d. ($38.69), delivered, less the usual rebate of 7s. 6d. The tin plate minimum is unaltered at 23s. 6d. ($5.43) basis, IC, f.o.b. Bristol Channel. The market is dull and buying is restricted. Few fresh orders are coming in and makers are perturbed. Production already has been curtailed, as follows:

Richard Thomas & Co., Ltd., Swansea, Wales, has closed the Cwmbwrla Works at Swansea and the Burry Works at Llanelly. The Ashburnham Tinplate Co., Ltd., Burry Port, and the Western Tinplate Works, Ltd., Llanelly, have been closed. The Villiers Tinplate Co., Ltd., Briton Ferry, is working two days per week. Stocks are increasing, although tin plate has been shipped to France and elsewhere on consignment to find a market.

Galvanized sheets are quiet but firm, on well-filled order books.

Black sheets are dull. There is little Far Eastern demand, but other markets are showing better interest.

On the Continent of Europe

Continental markets are strong. Pig iron is unobtainable before January shipment. Sellers of semi-finished steel want February as the earliest date of shipment. Business generally is confined to merchant sales. Billets are being sold at £5 12s. 6d. ($26); sheet bars at £5 15s. ($26.57); wire rods are quoted at £7 ($32.34); all f.o.b.

Merchant bars are being sold at £6 14s. 3d. (1.39c. per lb.), c.i.f. India. Germany has sold 60 to 70-lb. rails at £5 17s. 6d. ($27.14), f.o.b., but now is asking up to £6 2s. 6d. ($28.30), f.o.b.

German plate rollers are negotiating relative to the formation of a "trust." The Rheinische Stahlwerke, at Meiderich, is closing its plate mills Jan. 1. The Neunkirchener Hütte proposes to discharge 800 hands and to reduce the wages of those kept at work, as it is operating at a loss.

Much Better Feeling in British Iron and Steel Circles

LONDON, ENGLAND, Nov. 13—The rout of the Socialist party at the polls and the chances of a stable government in power for a few years has brought about a feeling of renewed confidence in the future of trading conditions in this country and the iron and

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British and Continental prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at $4.62 per £1, as follows:

Durham coke, del'd	£1	5s.				$5.78		
Bilbao Rubio ore†	1	4				5.54		
Cleveland No. 1 fdy.	4	6	to £4	7s.		19.87	to	$20.10
Cleveland No. 3 fdy.	4	1½	to 4	2		18.83	to	18.94
Cleveland No. 4 fdy.	4	1				18.71		
Cleveland No. 4 forge	4	0				18.48		
Cleveland basic	4	0				18.48		
East Coast mixed	4	8½	to 4	9		20.44	to	20.56
East Coast hematite	4	19	to 5	0		22.87	to	23.10
Ferromanganese	14	0	to 14	15		64.68	to	68.15
*Ferromanganese	14	0	to 14	15		64.68	to	68.15
Rails, 60 lb. and up	8	10	to 9	0		39.27	to	41.58
Billets	7	5	to 8	0		33.50	to	36.96
Sheet and tin plate bars, Welsh	8	7½				38.69		
Tin plates, base box	1	3½				5.43		
						C. per Lb.		
Ship plates	9	0	to 9	10		1.86	to	1.96
Boiler plates	13	0	to 13	10		2.68	to	2.79
Tees	9	2½	to 9	12½		1.88	to	1.98
Channels	8	7½	to 8	17½		1.73	to	1.83
Beams	8	2½	to 8	12½		1.68	to	1.78
Round bars, ¾ to 3 in.	9	7½	to 9	17½		1.93	to	2.04
Galv. sheets, 24 gage	17	10				3.61		
Black sheets, 24 gage	12	10				2.58		
Black sheets, Japanese specifications	15	5				3.15		
Steel hoops	10	15	and 12	10*		2.22	and	2.58*
Cold rolled steel strip, 20 gage	16	0				3.30		

*Export price.
†Ex-ship, Tees, nominal.

Continental Prices, All F. O. B. Channel Ports

Foundry pig iron: (a)								
Belgium	£3	15s.	to £3	16s.		$17.33	to	$17.56
France	3	15	to 3	16		17.33	to	17.56
Luxemburg	3	15	to 3	16		17.33	to	17.56
Basic pig iron: (a)								
Belgium	3	14				17.10		
France	3	14				17.10		
Luxemburg	3	14				17.10		
Billets:								
Belgium	5	12½				26.00		
France	5	12½				26.00		
Merchant bars:						C. per Lb.		
Belgium	6	0	to 6	5		1.24	to	1.29
Luxemburg	6	0	to 6	5		1.24	to	1.29
France	6	0	to 6	5		1.24	to	1.29
Joists (beams):								
Belgium	6	0				1.24		
Luxemburg	6	0				1.24		
France	6	0				1.24		
Angles:								
Belgium	8	0	to 8	5		1.65	to	1.70
⅛-in. plates:								
Belgium	7	5				1.50		
Germany	7	5				1.50		
⅞-in. ship plates:								
Luxemburg	7	5				1.50		
Belgium	7	5				1.50		

(a) Nominal.

steel trades have not been slow in joining in this. A fortnight ago pig iron prices were low and stocks in makers' hands unwieldy; now, thanks to heavy buying on the part of home consumers, these have been well absorbed, and certain grades are scarce.

Prices naturally have been affected and mark a rise of up to 2s. 6d. Output is still restricted, so that makers are well placed, but rather than let values be rushed up unduly, makers are considering putting more furnaces into blast. There is as yet no marked improvement in export business, and until such is the case, the recovery in prices can hardly go far. If costs could come down to more reasonable levels pig iron could be sold at a lower rate and the imports of foreign iron would thereby be considerably curtailed.

It is not without significance that a turn has been seen on the Continent. For a long time producers there have adopted a cut-throat policy to secure orders to keep the mills going, and it was clear that this state of affairs could not last. Now with the forming of individual trusts, etc., prices have responded quickly.

Consumers of semi-finished steel in this country have made heavy commitments—whether in view of possible import duties on such material, it is hard to say—and billets and sheet bars are now no longer obtainable from Continental works. At the same time India and other markets, after withholding for many weeks, have come back on the offers made them of late, with the result that in some cases merchants have been caught short and there has been something of a scramble to cover.

There is no doubt that the industry as a whole has passed the critical period, and the future is being looked forward to with far more confidence and hope than was dared to be expressed some months ago. It only remains for export markets to realize that the time of cheap unremunerative selling prices is past. Steel works in this country are still by no means happy, but the increase in domestic demand is a favorable omen.

An interesting feature recently disclosed is the adoption of mass production in the railroad rolling stock trade. The London, Midland & Scottish Railway Co. has laid down a plant capable of turning out one 12-ton covered wagon (box car) in 105 min. During this time the parts, consisting of steel frame and wooden roofs and walls, are shaped, cut, drilled, painted and assembled and put on rail. By this means the company hopes to produce 2000 wagons in the next 12 months. The same company has just placed a contract for 250 20-ton tube wagons with British firms.

A Liverpool firm has placed a contract with the Furness Shipbuilding Co., Haverton Hill, for two 13,000-ton twin-screw motor ships, to be engaged in the oil and molasses trade. Swan, Hunter & Wigham Richardson, Ltd., Wallsend-on-Tyne, have just launched the 11,250-ton City of Mandalay for the Ellerman Lines.

SYNDICATES INTRIGUE GERMANY

Iron and Steel Interests Combining—Business Much Improved—Unemployment Less

BERLIN, GERMANY, Nov. 12.—The Steel Syndicate has been created at last. From the American viewpoint the success of the negotiations is not prejudicial, because the aim is to reduce production, with naturally the further unavowed aim of maintaining profit-yielding prices. But the foreshadowed international steel syndicate might affect American interests. As America's producing capacity exceeds that of all Europe, and her normal development, as the *Neu Freie Presse* points out, would be to increase exports to Europe, the export of a relatively small proportion of American steel would upset the European market and presumably would be strongly resisted by any European international syndicate. Meantime the German syndicate "Rohstahl-Gemeinschaft" will regulate business at home. The president is Fritz Thyssen; vice-president, E. Poensgen of Düsseldorf. The production quotas of nearly all the participating concerns already have been fixed. The combined quotas, based on past production at full capacity, total about 14,000,000 metric tons. The first meeting of the syndicate decided to reduce the steel output in December by 20 per cent and that of semi-finished materials by 10 per cent, but these figures will be revised from time to time according to current conditions. The proposed syndicate for semi-finished goods has not been created.

Subordinate Syndicates Proposed

Negotiations for formation of the subordinate syndicates for different sorts are under way. Most progress has been made so far with the proposed thick sheets syndicate. A tubes syndicate also is being negotiated. Syndicates for bars, construction forms, wire and bands will be formed. No progress has been made yet toward the international syndicate. With France discussions have been so far informal; it is reported that Sweden is ready to join.

German iron trade papers continue to proclaim that France will be bound to come in, owing to her overproduction. In the first nine months of 1924 France produced 5,697,895 metric tons of pig iron, 2,223,848 tons of it in Alsace-Lorraine; and 5,134,321 tons of steel, 1,749,061 tons in Alsace-Lorraine. Dispatches from London declare that Sir Robert Horne has urged English producers to join a Continental combine.

Business all around has much improved. The number of totally unemployed in the whole republic, estimated at 3,000,000 on Jan. 1 and 574,500 on Sept. 15, had fallen by Oct. 15 to 473,000. In the iron and steel branch unemployment is still relatively high; in the Rhineland alone are 110,000 fully unemployed; but here also a marked improvement has taken place, and the fall of prices has come to an end. Prices on Nov. 9, ex-works in gold marks per metric ton were:

Blooms	103 to 105	or $24.93 to $25.41 per gross ton
Billets	108 to 110	26.14 to 26.62 per gross ton
Slabs	118	27.35 per gross ton
Bars	120 to 122	1.30c. to 1.32c. per lb.
Structural forms	112 to 114	1.21c. to 1.23c.
Thick sheets	135	1.46c.
Medium sheets (3 to 4.75-mm.)	155	1.67c.
Thin sheets (1 to 3-mm.)	180	1.95c.
Thin sheets (under 1-mm.)	185	2.00c.

Demand is great. Semi-finished material is already scarce; blooms cannot be had at all, owing to a sudden demand from the railroad shops; and large quantities of these sorts, and in particular of wire rods, have been bought for export, while England is buying billets. Demand for tubes is weaker, that for sections for railroad car and ship construction very active.

Machine Tools and Other Products

In the iron-consuming finishing industries a moderate improvement is reported. Some concerns have enough work, others very little. In the Schmalkalden metal-working district unemployment has declined. From Solingen is reported a marked improvement, and the number of unemployed has fallen to 1400. The abolition of the Franco-Belgian internal customs frontier, as result of the Dawes settlement, benefited Solingen products more than any other. Prices have fallen. The razor and rust-free steel branches are exceptions to the general improvement.

Demand for machine tools has increased, but conditions still are unsatisfactory. Increased home orders are being received for turbines, increased export orders for pumps and compressors. Better conditions are expected for printing and paper-making machines. Machine prices fell slightly in October, but a new wage agitation seems impending. The last official report shows a slight increase in nominal wages and a decline in real wages owing to greater cost of living. The official price-reduction campaign continues. The sales tax which, owing to its repetition every time an article changes hands in course of production, often added 6

or 8 per cent to production costs, has been reduced to 1½ per cent, after an earlier reduction from 2½ to 2 per cent. Taxes on capital transactions, which made credit dear, also have been cut down.

Automobile Makers Want Heavy Duty

The automobile branch stagnates. Technically Germany in this branch fell behind during the war, and now great efforts are being made to catch up, hence the Government's plan to impose almost prohibitive import duties on light and cheap foreign cars is being enthusiastically supported by manufacturers, while the automobile trade strongly resists. Plans are under way to raise 20 to 40 million gold marks for establishment of works for mass production of cheap standardized cars. Germany has nothing resembling the Ford or the French Citroën. Her whole annual capacity is 30,000 to 40,000 cars, and as this is distributed among a number of companies very cheap production is impossible.

Tariff Matters Much Discussed

The iron tariff question has produced a breach between the raw and semi-finished material producers and the consuming manufacturers. First at a Berlin meeting, and then during the Düsseldorf syndicate negotiations, stiff protective duties on heavy iron and steel were demanded. The pig iron duty, it was proclaimed, must be raised from 1 mark to 1.50 marks per double-centner (220 lb.). The agitation in this sense is strong.

To protect their interests, which are for low material prices, the manufacturers, including those who use aluminum, have formed a federal association of the metal-wares industry. Manufacturers declare that existing duties on raw and semi-finished iron increase the production cost of machinery by 5 to 6½ per cent. The steel syndicate's demand is opposed also by an organization of industrial concerns which consume sheets and tin plate.

The Cabinet's policy on this point is ambiguous, but the Federal Economical Council has declared repeatedly for moderate duties, and for all-around most-favored-nation treatment. Its latest resolution, passed after examining a Government plan for altering the duties on about 25 per cent of the items in the existing tariff of 1902, is as follows: While efforts should be made to supply the home demand for raw materials as far as possible from home sources, no protective duty on such goods should be so high as to reduce the nation's competitive ability to export high-value manufactured goods.

SMALL IMPROVEMENT IN FRANCE

Iron and Steel Market Still Hampered by High Price of Coke

PARIS, France, Nov. 8.—A slight improvement has taken place. The fall in the price of coke being insufficient to reduce the cost of pig iron more than by 8 or 9 fr. a ton, together with the improvement in the American industry and the checking of the fall in Belgium, are responsible for the better tendency of prices.

Germany is buying large amounts of raw and finished goods to build stocks in view of the rise that will likely occur on her inland markets by the putting into force of her new customs tariff.

As a result of British and American elections, it may confidently be anticipated that an improvement will be felt in trade in general, but unfortunately, the French are menaced with new fiscal measures which will adversely affect their commerce; for the present time, business is restricted.

Coke.—From Oct. 1 to 28, the supply of coke to the ORCA has been 253,349 tons, a daily average of 9050 tons. The M. I. C. U. M. was relieved of its functions in the Ruhr on Oct. 28. On the next two days a total of 11,555 tons came in. Since that date, 840 tons were received through Ehrang on Nov. 3 and 1125 tons through Aix on Nov. 5. Thus the deliveries are practically stopped. However, the French metallurgists have enough coke to live on until the delivery program is fixed by the Reparation Commission.

Output of coke in the French northern collieries is intensively carried on; in the Courrières coal pits, where coke production has been unknown so far, 90 ovens, of a productive capacity of 140,000 tons a year, are now being erected; 140 new ovens are under construction at Lens; the annual production of the Noeux collieries is raised by 120,000 tons and the Aniche mines will, henceforward, have an annual production of 300,000 tons.

Reparation coke in France stands now at 143.75 fr. a metric ton, or $7.66 per gross ton (ORCA's charges included), while in Belgium the price is 130 Belgian fr. (119 French fr., or $6.34), comparing with 108 fr., or $5.75, inland price of German coke; 98 to 108 fr., or $5.22 to $5.75, inland price of British coke; 65 fr. or $3.46, inland price of American coke.

Pig Iron.—Pig iron is quiet but steady. The anxiety raised by the diminution of coke arrivals in the last days of October has led to slackening of the demand and to a certain resistance in prices. The average quotation for No. 3 PL stands at about 300 fr. a ton ($16), at furnaces, and there is no report of orders being executed under 295 fr. ($15.75). A similar improvement is noticed on the export market; No. 3 is maintained at 340 fr. (Belgian) f.o.b. Antwerp (312 French fr., or $16.62). Our commerce with Italy and Switzerland is increasing but the rates imposed by the buyers, 385 fr., or $20.50, on truck f.o.b. Modane, and 390 fr., or $20.78, f.o.b. Bâle, are not very tempting, stock owners alone being able to sell at such rates. Basic is a little firmer at 70s. to 72s. 6d. f.o.b. Antwerp (309 fr.). The demand has grown larger for hematite; a momentary agreement between the producers has made the price 410 fr., or $21.85, at furnaces.

Ferroalloys.—Fair request for all grades of ferrosilicon, the 45 per cent quality is almost unobtainable from lack of production and is quoted at 1000 fr. a ton ($53.30), delivered Franco-Belgian frontier. The 25 per cent grade is more abundant at 850 fr. ($45.30), delivered. In Antwerp, Norwegian ferrosilicon, 45 per cent, is quoted at £11 (950 fr., or $50.60); 75 per cent, £17 2s. 6d. (1480 fr., or $78.85). A large order of ferromanganese was booked in the North at 1335 fr. a ton ($71.10), delivered, comparing with the price of 1350 fr. ($71.90) free in the Center. The raising of entry duties from 157.50 to 240 fr. ($8.39 to $12.80) has been laid before the Customs Commission in Parliament. Spiegeleisen of 10 to 12 per cent Mn is worth 510 to 520 fr. ($27.17 to $27.70) on truck, East.

Semi-Finished Products.—Inquiry has grown larger in almost every section of iron and steel. Germany has placed important orders with both the Luxemburg and Lorraine mills, for delivery in January. Home prices have strengthened at 39 to 40 fr. ($20.78 to $21.30) for blooms; 42 to 43 fr. ($22.39 to $22.90) for billets. The export rates are: 450 to 460 fr. for blooms; 470 to 480 fr. for billets; 490 to 500 fr. for largets.

Rolled Steels.—With improvement of business, prices are steadier. The average ruling price for large specifications is 48 to 49 fr. per 100 kg. (1.14c. to 1.17c. per lb.). For merchant and special steels the demand is larger and prices steadier, merchant steels being 51 to 54 fr. (1.21c. to 1.28c.), basis. The bulk of German orders has been placed in this section. Beams are £5 10s. to £5 12s. 6d. (1.13c. to 1.16c.); bars, £5 12s. 6d. to £5 15s. (1.15c. to 1.19c.) French exports to Southern Germany are increasing.

Plates and Sheets.—While the market is unchanged on the whole, medium and light sheets are in a less favorable position. Delivery times are increasingly shorter. For export, the Belgian plants consent to deal at £6 12s. 6d. (1.37c. per lb.) (5-mm. and above). The Belgian inland rates are: 3-mm., 675 fr.; 2-mm., 775 fr.; 1.5-mm., 900 fr.; 1-mm., 1025 fr.; 0.5-mm., 1175 to 1200 fr.

Wire Products.—Wire rod is still much offered, the average price being 530 to 540 fr. ($28.25 to $28.77) a ton, with concessions for large orders, and £6 2s. 6d. ($28.30) for export. By-products are also inclined to ease; wire nails sell at 85 to 88 fr. (2.02c. to 2.09c per lb.); in clear and annealed wires, competition is keen.

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ESTABLISHED 1855

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Sales, Not Contracts, in Steel

SINCE the election predictions have been numerous that finished steel prices in general would rise, if not immediately, at any rate for the first quarter of the new year. Presumably the advances would come first in, or be confined to, the lines that have suffered most by declines from the top level reached in April of last year.

Appraisals of the prospects of steel price advances or declines, either now or at any time in the future, must be made in the light of the new style of doing business in finished steel products as compared with the style for many years before the war. Full attention must be given to the fact that the prevalent method now is to make outright sales, when the old style was to make contracts. These, when they did not work out to the satisfaction of the mills, as was frequently the case, were called "jug-handled," "option" or "accordeon" contracts.

Some of the old timers in the steel trade assert that Mr. Carnegie was responsible for the vogue of the contract system. He had large capacity to engage and would advise a customer to make a contract. Then, if the customer should need steel, he would get it. If not, it would be all right. Competitors found when requirements increased that consumers were obligated already, and had to adopt the same tactics. When there was what was quietly called a "controlled market," there would be an open price, no one would be willing to pay a cent above the open price and a single cut of that price, if it became known, would sound an alarm. Specifying would fall off or cease. It was perfectly natural and unavoidable that the mill should feel it a duty to relieve its customers from taking out remaining tonnage under the contract except at a satisfactory price adjustment.

The system looked like a very loose and unbusinesslike one, but it seemed to work well. At any rate, both producers and consumers throve under it. At intervals there was agitation for a "reform," but the mills were reluctant to experiment. The typical mill felt that in order to "operate" it had to have a full order book ahead. A little slip was made, in neglecting to recognize that to "operate" is not the prime function of a steel company. The prime function is to make profits. To operate is incidental, even though absolutely necessary.

Much of the objection to the "reform" of substituting outright sales for contracts lay in fear that under the proposed style prices would fall readily. A mill would feel free to cut because it did not have an order book to protect. Not enough attention was given to the other side, that prices would have a similar freedom to rise. Under the contract system, the outside limit of the possible consumption was covered and a mill that did not sell in the selling period would find all buyers covered. Under the new system, when a mill advances its prices above the going market, it loses business only for the limited period in which it is out of the market. Under the old system, being out of the market for a month might involve loss of business covering three or six months of deliveries.

In advancing prices under the present style, a mill knows what its possible loss of tonnage will be and the loss is so much smaller than under the old style that the experiment is an attractive one. In legitimate business the ambition of a seller is not to undersell its competitors but to oversell them. With the fear removed that all the business for months to come will be corralled by others if one stays out of the market for a while, there is more freedom to try the experiment of an advance.

Nowadays the buyer of steel must be keen to watch the market. He does not have his course cut and tried for him. An advance in a given line may come at almost any time. There is no general signal. All this has been exemplified in recent market history, which has followed lines different from those of before the war. The rise of the first four months of 1923 had no parallel in previous steel market history, for it was a fresh advance without the usual intermediate decline. The great differences in declines in the various products from the level of May 1, 1923, are likewise unprecedented. Under the old style, the various products moved up and down very much to-

gether. A change in one line was signal for changes in others. Now each tub stands on its own bottom and each market has to be watched.

Steel Tonnage Prospects

FORECASTING this year's steel ingot output at 36,000,000 tons, which is close enough for the purpose, we have it that the tonnage falls 17 per cent below that of 1923, runs 4 per cent above the six-year post-war average, through 1924, and is 19 per cent above the tonnage in the two largest pre-war years, 1912 and 1913, while it is precisely two-thirds of the present estimate of actual capacity, 54,000,000 tons.

Thus we have a basis of comparison in attempting to forecast the tonnage possibilities of 1925. Steel exports were large in 1920, when they engaged 10 per cent of our capacity, and have been small in the past three years, in none of which did they take 5 per cent of our capacity. No great harm, therefore, is done if the export matter be omitted from consideration.

Steel demand may be regarded as a matter of needs, buying power and physical ability to consume. Needs are related to buying power, industrial activity and the engineering and other skill devoted to the development of new uses. Money being easy, buying power applies but little restriction to demand for steel within the discernible future. It is chiefly a question of how much steel can be put to really good use, and how much physical ability there is to consume steel.

In the case of oil country goods, oil production has been decreasing and oil prices have been tending to rise, whereby the needs promise to be larger in 1925 than this year. Physical ability to consume is not a limitation, as steel consumption per man-hour employed in drilling is large. In some lines, like road building, it is very small. It is a moderately poor year when oil country goods, including line pipe, run under 1,000,000 tons, while 1,500,000 tons has not yet been attained. Thus there are possibilities of a few hundred thousand tons to be gained next year in that direction.

Production of passenger automobiles has run slightly under 300,000 a month, chiefly very light cars, in the past two years. A gain or loss of 50,000 a month next year would be very large; so the leeway there is probably less than a quarter million tons for the year.

In the first eight months of this year fabricated steel business ran even with that of last year, the next two months showing a substantial gain over the same months of 1923. The average for the ten months is two-thirds of the estimated fabricating shop capacity, which is taken at 260,000 net tons monthly. Engagement of the other one-third of capacity would represent 930,000 gross tons in a year. That refers purely to physical capacity of fabricating machinery. Labor would not be available for 50 per cent more building work next year than we have been having this year.

Freight car statistics indicate that installation of about 10,000 cars monthly is normal, to balance depreciation and provide additional capacity. Every 10 per cent variation from this would represent, roughly, a quarter million tons more or less steel per annum. Thus there is not much leeway there. As to rail replacements, they really run quite steady from year to year and therefore promise little change for 1925.

Only a few high spots have been hit in the above sketch, but a definite hint is furnished as to the scope of variations. This year we are making about 27,000,000 gross tons of finished rolled steel. It would require 13,000,000 tons more to attain capacity and 13,000,000 tons less to get down to the phenomenally lean year 1921. It seems obvious that 1925 is unlikely to go very far in either direction, while the present prospects are clear that it will gain in a moderate way.

Might Labor Buy Control of the Railroads?

A FEW weeks ago, previous to the election, a thoughtful and painstaking man estimated that on the basis of the market quotations for railroad stocks at that time the control of all the railroads of the United States might be purchased for about two and one-half billion dollars. He pointed out that if the railroad employees would unite in saving only one-fifth of their earnings for a relatively short period, they could acquire the capital goods of their industry and solve all the economic troubles whereof they complain, far more effectively than by government ownership.

This was an interesting suggestion, although manifestly impracticable. Apart from its impracticability, industrial ownership is the last thing in the world that the railroad men or any other craftsmen want to bring about, notwithstanding the tears that sentimental Socialists shed over workmen having lost the control of the tools of production in the development of modern industry under the capitalistic system. What the loud-speakers for the proletariat want and expect out of government ownership are special privileges and favors without the assumption of any industrial responsibility. Fortunately the great mass of American workmen is too intelligent to be deceived by anything so chimerical.

The Rise in the Stock Market

AKIN to the representation of a short while ago that a majority of the stock of all the railroads of the United States might be bought for about two and one-half billion dollars, is that to the effect that the recent rise in the stock market added something like three billion dollars to the wealth of the country. The last is a statement that is so apparently true and at the same time so apparently false that it deserves examination and explanation.

The wealth of the country as commonly inventoried consists of its real estate, railroads, factories, mines, chattels, etc. It is wholly physical. Another form of wealth is the foreign investment and lendings of our people, which, of course, rest upon a physical basis abroad. Some economists recognize, others do not, a further form of wealth that has been called intangible. This means the capitalization of earning capacity that exists in

the absence of physical property, or out of all proportion to such possession, that may, for example, occur in the instance of a newspaper. In all of our big corporations there is a great deal of intangible wealth in the forms of accumulated experience, organization, patent rights, good will, etc.

Now, while a country may lose billions of its physical wealth almost over night by earthquake or fire, not even can such a rich country as the United States gain three billions within a fortnight. It might normally make such a gain in six months. As between the first of November and the middle of that month, we had substantially no change in our railroad mileage and equipment, in our number of houses, our number of cattle, stocks of goods, etc. Nevertheless it is undeniable that during that brief period the quotational value of securities based upon that same physical wealth increased by three billion dollars or so, that this increase did not make some persons richer at the expense of others who became poorer, that it was not illusory in that some people liquidated at the advance, while to all holders there was an expansion in their bases for credit. All of this seems to be paradoxical.

Let us try to solve and explain this paradox. Fundamentally it grows out of the difference between buying and selling a property as a whole or in small pieces, and in turn that may be of different effect at different times. It is seldom that a railroad, a mine or an industrial enterprise is bought or sold as a whole, or even as to control, through the medium of the stock exchange. The transactions in the latter are for relatively small parts of the capital stock of any one company. In a general way they reflect ideas of value, but it may be that such ideas are wrong and it may be that exigencies introduce factors that have no relation to value. If a very large number of persons felt constrained to liquidate great volumes of securities at the same time, their realization would have very little relation to actual value, or even to reason. Such an occurrence toward the end of July, 1914, is well remembered and it led to the closing of the stock exchange. On the other hand, concerted buying would put stocks higher than real value. We scarcely need to mention instances where forced liquidation has been concluded by the private transfer of a block below the market; or where the control of a property has been secured by private negotiation at a price in excess of the market. We have referred to a certain cynical suggestion that the control of the railroads of the United States could recently have been purchased for two and one-half billion dollars. Probably any attempt actually to do that would have proved far more costly.

Railroad stocks were not the only ones that recently were selling too low. Many stocks had declined on relatively few transactions. An inactive stock has sometimes gone off 5 per cent on sales of a few hundred shares. This may not signify that the value that it represents has changed in any degree whatsoever. Nevertheless persons who are using that stock for collateral find their credit impaired by so much. Of course, a stock would not experience such a decline if there were many buyers in the market. The absence of buyers may imply general lack of confidence, the disinclination to enter into further commitments.

The election of this month had the effect of inspiring general confidence. Instead of there being relatively few buyers, there quickly developed a great many. Thereby the quotations for stocks were caused to rise. Physical values were not altered. Real wealth was not increased. But as among the people of the country in their ordinary business of investment and exchange, credit was extensively improved. An individual by liquidating one or more of his investments might have enlarged his personal share in the wealth of the country, but that might have been at the expense of somebody else who had previously been constrained to liquidate his share at a loss. The great economic effect of the rise in the stock market has been not upon the wealth of the country but rather upon the credit of the owners of that wealth.

Farmers and Manufacturers Cooperating

THE National Founders' Association has long been noted for the excellence of the programs presented at its annual conventions, and the recent convention in New York not only maintained the high standard of past years but exceeded it in some respects.

The outstanding feature of the meeting was the effort to bring into closer relations the manufacturers of the country and the farmers. Truly this is an ambitious undertaking. The secret misunderstandings and jealousies between the makers of things and the raisers of crops are well known and deep seated, while at times open antagonism as displayed in halls of congress and elsewhere has not been lacking. The welfare of the people of all classes has demanded that these conditions be changed, and the conferences held at Atlantic City and New York give substantial reason for believing that the new movement inaugurated by the National Founders' Association and the National Grange will have satisfactory results of far reaching character.

At the interesting session at the Hotel Astor last Wednesday afternoon, perhaps the most encouraging feature was the allowing of utmost freedom in advocating or opposing economic policies. One speaker who expressed positive disagreement with some of the views of the manufacturers and was not perhaps entirely reasonable in his criticisms was listened to with rapt attention and was heartily applauded at the conclusion of his impassioned address.

Also in disagreement with manufacturers to some extent, but speaking with more sense of humor and more kindly feeling, was Mrs. Dora Stockman of the Michigan Grange, the first one of her sex invited to address the association in all of the quarter century of its history. Mrs. Stockman indicated in a very practical way, in the case of the manufacture of sugar, how farmers and manufacturers through a spirit of cooperation could start up idle plants and revivify an almost moribund industry.

It is not too much to hope that at future conferences emphasis will be put upon the things concerning which there is good prospect of agreement and that matters upon which there is radical difference of opinion will be ignored, at least temporarily. If such a policy be followed, highly gratifying results will be attained.

Too Many Technical Papers?

A VERITABLE flood of technical papers has recently come upon the industrial public. From Sept. 22 to Oct. 24, or virtually one month, about 160 contributions to five technical organizations have been printed, delivered and more or less discussed. The foundrymen attempted to digest 65 papers and reports dealing with every phase of activity of the metal casting industry. At least 45 papers were on the program of the association of steel treaters. Then came nearly 30 before the electrochemists with perhaps 20 divided between the American Iron and Steel Institute and the mining engineers. This summary does not include original articles in the technical press. No small measure of commendation is due the authors and the organizers of these societies, but is a deluge a benefit? No busy metallurgist, electrochemist or steel investigator can begin to digest all the documents thus offered, nor can he satisfactorily discuss them. Even the technical press finds it difficult to present an adequate summary of all the worth-while things offered.

The situation emphasizes the dilution and duplication resulting from independent society endeavors. That there is overlapping there is no doubt. If the quantity cannot be reduced, at least the time of releasing it should be regulated. If one of the two larger conflicting organizations could hold its convention and exhibition in the spring and the other in the fall, some relief and benefit would result. Many metallurgists and foundrymen would heartily approve the change and many papers now neglected would have a better hearing.

"Work for the Joy of Working," Said Mr. Schwab in Pittsburgh Address

Charles M. Schwab, chairman, Bethlehem Steel Co., who was the Carnegie day orator at the initial annual observance of the birthday of Andrew Carnegie by the students and faculty of the Carnegie Institute of Technology, in 1913, served in that capacity at the twelfth of these observances held Friday, Nov. 21. "Work—not for the sake of making money—but work for the joy of working," was the recipe for success and happiness in life prescribed by Mr. Schwab. "Success," he said, "is not measured in dollars and cents. Because a man has become wealthy is not an indication of success in life. Success in life is judged by the esteem in which a man is held by his fellow men. Whatever you intend to do in life, do it with your heart and soul. Let no obstacle stand between you and the accomplishment of your purpose. But in doing it, remember that the approval of your fellow men, the men and women with whom you work and are associated, is the final test of your success, no matter how much money you have made. The mark of a man's greatness is not how much money he has made, but how he stands in the hearts of his fellow men."

Mr. Schwab paid a deep and earnest tribute to Andrew Carnegie and urged the students to keep the memory of Carnegie constantly before them as a source of inspiration. "Mr. Carnegie never complained," he said in recounting the qualities that made the iron master a success in life. "Mr. Carnegie inspired all who were associated with him. He believed that business went along best when the men behind a business were in a jovial frame of mind. He believed that good business and good judgment came only from happy frames of mind."

Unions May Try to Organize Steel Workers of This Country

Organized labor will launch another campaign to bring into the ranks of the Federation of Labor the 400,000 steel mill employees, say newspaper reports from El Paso, Tex., where the N. F. A. has been holding its convention. Michael F. Tighe, veteran leader of steel workers, is credited with saying that all unions connected with the industry will be asked to contribute funds and organizers for the task; also that efforts are somewhat handicapped by the action of Judge Gary in granting the 8-hour day to workers in the United States Steel Corporation.

Largest Immigration to United States Was from Germany in September

WASHINGTON, Nov. 25.—Immigration to the United States in September totaled 27,941 arrivals, according to the Bureau of Immigration, Department of Labor. For the three months period from July to September the total was 62,892. Emigration in September amounted to 8671, while for the three months it was 25,897. Immigration from Europe in September totaled 14,041, of which the largest number from any single country came from Germany, the number being 4258. The next country in rank was the Irish Free State, with a total of 2317, while from England there were 1479, and from Scotland 1058. Immigrants from Sweden amounted to 886; from Norway, 567; from France, 530; and from Italy, 412.

Of the total number of immigrants in September, 6442 went to New York; 3045 to Massachusetts; 2428 to Michigan; 2202 to California; 1962 to Illinois; 1648 to Pennsylvania; 1432 to Texas, and 1172 to New Jersey. There were only 107 skilled iron and steel workers in the September total and only 22 metal workers other than iron and steel and tin. The total number of skilled workers was 4354, of which the largest single lot, 1281, were listed as clerks and accountants.

Sweden Sends More Iron and Steel to U. S.

WASHINGTON, Nov. 25—Increase in exports of iron and steel from Sweden to the United States during the third quarter of 1924 is shown by the total of $1,079,854, against $486,424 for the same quarter of 1923. Corresponding figures concerning iron ore from Sweden were $511,794 and $602,540. The total value of iron and steel imports from Sweden during the nine-month period ended Sept. 30 was $3,416,553, against $1,309,162 for the corresponding period of 1923. Other important items in which gains in exports from Sweden to the United States were made were woodpulp and paper.

Imports of iron and steel into Sweden during October declined to 17,450 metric tons, while exports rose to 23,000 tons, Trade Commissioner T. O. Klath, Stockholm, cables the Department of Commerce. Shipments of iron and steel valued at $378,000 went to the United States, as did exports of iron ore to the value of $77,000. The total exportation of iron ore from Sweden for October amounted to 678,000 metric tons, a decrease from the volume in the preceding month.

Iron and Steel Markets

HEAVY SPECIFICATIONS

Less New Buying, but Mill Demand Strong

Pig Iron Activity Sustained and Prices Higher —Steel Prices Strengthening

Some subsidence in the buying of steel products but a marked expansion in the tonnage of orders released against contracts is a development of the week. Buyers appear willing to postpone a testing of new prices, but are making a heavy demand on current production, even with protection extending through February at recent price levels. The result is a further increase in mill operations.

The broadening in demand is noteworthy. The railroads remain conspicuous in steel takings; general steel building work is of surprising proportions; a slow gain from the agricultural implement trade, until that is now on a 60 to 70 per cent manufacturing rate, is reported; and automobile companies are placing liberal contracts with parts makers.

Price advances, not yet general, now cover wire and sheets. The new levels would establish wire products and black sheets $2 a ton and galvanized and automobile body sheets $3 a ton above those of recent transactions.

Present prices are to be continued for coke tin plate and heavy orders have been booked for next year. A slight advance has been named for charcoal plates and also for short terne plates, because of higher costs of coating metals.

On bars and structural shapes 2c. Pittsburgh basis appears to be the minimum on new business. Plates are obtainable in the East on a 1.80c., Pittsburgh basis, though the price is 1.90c. in the Central West.

Ingot output in the Pittsburgh and nearby districts is now close to 70 per cent of capacity, against 65 one week ago and 60 two weeks ago. The general average of finishing mill operations is fully 70 per cent. On Nov. 1 there were 73 blast furnaces in production in the district and today 78. Another blast furnace has gone in at South Chicago and steel output there has advanced to a 75 per cent rate, while a large Chicago district independent steel mill remains on an 80 per cent basis.

The railroad program of additions and betterments is indicated by the purchase by the Sante Fe of 85,600 tons of rails and 25,000 tons of bridge work. For railroad shop work 10,000 tons of steel has been bought. The Chicago & North Western has ordered 3200 freight cars, taking 39,000 tons of steel. The Southern Pacific is expected to buy some 15,000 cars.

The buoyancy of building activity, hastened possibly by the stronger tone of the steel market, is shown in the week's awards of over 85,000 tons of fabricated steel, the largest weekly total reported this year. Fresh inquiries call for over 42,000 tons.

Pig iron sales in the past week have amounted to fully 250,000 tons, making a total since Nov. 1 of over one million and a quarter tons. In the latest selling, Chicago was in the lead with about 125,000 tons, while Cleveland sales were 50,000 tons and those in New York about 40,000 tons. Prices have advanced $1 on foundry, malleable and basic grades at Pittsburgh, and 50c. on Bessemer, while in Chicago, Buffalo and eastern Pennsylvania the market is much stronger and advances of 50c. to $1 have been recorded. An advance of $1 on charcoal iron is expected within a few days.

Sharp advances in quotations on European iron have to a large extent relieved the anxiety of domestic producers in regard to competition from abroad.

Current prices of sheet bars and billets have been extended to cover first quarter sales. Between 30,000 and 40,000 tons, mostly sheet bars, were booked in Cleveland, some subject to prices at time of shipment.

Following the increase in soft steel bars, bar iron in Chicago has actually been cut, apparently as a move to build up a backlog while the trade is taking the measure of the steel advance.

Mill purchases of heavy melting steel have brought about advances as high as $1.50 a ton.

Closer competition is indicated in railroad spikes by the makers' utilizing about as many basing points as there are spike-making centers. Thus it is expected that divergence in delivered prices will be narrowed by eliminating from estimates complex freight calculations.

Welsh tin plate mills, the outstanding active branch of the British steel industry, but for some time exporting on consignment in seeking consumers, have caught up on consumption and are now working short time or closing down.

Continental pig iron is unobtainable before January shipment and for semi-finished steel February is the earliest shipment date.

Both of THE IRON AGE composite prices advanced this week, pig iron going from $19.88 to $20.54 a ton, a new high level for the second half-year, and finished steel rising from 2.474c. to 2.517c. a lb., the highest point since mid-August. Both are still well below last year's level.

Pittsburgh

Prices Advancing as General Conditions Continue to Improve

PITTSBURGH, Nov. 25.—The steel market retains all of its recent favorable tendencies, with business less affected than usual by the proximity of the inventory period and with prices becoming more favorable to the producers. Late last week the American Steel & Wire Co. announced a general advance of $2 a ton in wire products and this week independent producers have generally withdrawn the old quotations.

The American Sheet & Tin Plate Co. as of today opened its books for first quarter business in sheets and for first half business in tin plate. Present prices at Pittsburgh, Gary and Elwood, Ind., are continued on coke tin plate, but there has been a slight advance in charcoal plates and in short ternes due to the fact

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics
At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	Nov. 25, 1924	Nov. 18, 1924	Oct. 28, 1924	Nov. 27, 1923
No. 2X, Philadelphia‡	**$23.76**	$23.26	$21.76	$24.14
No. 2, Valley Furnace†	**20.50**	19.50	19.50	22.00
No. 2, Southern, Cin'ti†	22.05	22.05	21.55	25.05
No. 2, Birmingham, Ala.†	18.00	18.00	17.50	21.00
No. 2 foundry, Chicago*	**21.50**	21.00	20.50	23.00
Basic, del'd, eastern Pa.	**21.50**	20.00	20.00	22.75
Basic, Valley furnace	**20.00**	19.00	19.00	21.00
Valley Bessemer del. P'gh.	22.26	22.26	21.76	24.76
Malleable, Chicago*	**21.50**	21.00	20.50	23.00
Malleable, Valley	**20.50**	19.50	19.50	22.00
Gray forge, Pittsburgh	**21.76**	20.76	20.76	23.26
L. S. charcoal, Chicago	29.04	29.04	29.04	28.15
Ferromanganese, furnace	105.00	105.00	95.00	107.50

Rails, Billets, Etc., Per Gross Ton:				
O.-h. rails, heavy, at mill	$43.00	$43.00	$43.00	$43.00
Bess. billets, Pittsburgh	35.50	35.50	35.50	40.00
O.-h. billets, Pittsburgh	35.50	35.50	35.50	40.00
O.-h. sheet bars, P'gh.	37.00	37.00	37.00	42.50
Forging billets, base, P'gh.	40.50	40.50	40.50	45.00
O.-h. billets, Phila.	**41.67**	41.17	41.17	45.17
Wire rods, Pittsburgh	45.00	45.00	45.00	51.00
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh, lb.	1.90	1.90	1.90	2.25
Light rails at mill	1.80	1.80	1.80	2.25

Finished Iron and Steel,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	2.32	2.32	2.32	2.67
Iron bars, Chicago	**2.00**	2.10	2.10	2.40
Steel bars, Pittsburgh	**2.10**	2.00	2.00	2.40
Steel bars, Chicago	2.10	2.10	2.00	2.50
Steel bars, New York	2.34	2.34	2.34	2.74
Tank plates, Pittsburgh	**1.90**	1.80	1.80	2.50
Tank plates, Chicago	2.20	2.20	2.00	2.60
Tank plates, New York	2.14	2.14	1.94	2.74
Beams, Pittsburgh	**2.10**	2.00	1.90	2.50
Beams, Chicago	2.20	2.20	2.00	2.60
Beams, New York	2.24	2.24	2.14	2.74
Steel hoops, Pittsburgh	2.50	2.50	2.50	3.00

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

Sheets, Nails and Wire,	Nov. 25, 1924	Nov. 18, 1924	Oct. 28, 1924	Nov. 27, 1923
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh.	3.50	3.50	3.50	3.75
Sheets, black, No. 28, Chicago dist. mill	3.60	3.60	3.60	...
Sheets, galv., No. 28, P'gh.	4.60	4.60	4.60	4.85
Sheets, galv., No. 28, Chicago dist. mill	4.70	4.70	4.70	...
Sheets, blue, 9 & 10, P'gh.	2.70	2.70	2.70	3.00
Sheets, blue, 9 & 10, Chicago dist. mill	2.80	2.80	2.80	...
Wire nails, Pittsburgh	2.75	2.75	2.75	3.00
Wire nails, Chicago, dist. mill	2.85	2.85	2.85	...
Plain wire, Pittsburgh	2.50	2.50	2.50	2.75
Plain wire, Chicago dist. mill	2.60	2.60	2.60	...
Barbed wire, galv., P'gh.	3.45	3.45	3.45	3.80
Barbed wire, galv., Chicago dist. mill	3.55	3.55	3.55	...
Tin plate, 100 lb. box, P'gh.	$5.50	$5.50	$5.50	$5.50

Old Material, Per Gross Ton:				
Carwheels, Chicago	$19.00	$19.00	$17.50	$18.50
Carwheels, Philadelphia	**19.00**	17.50	17.50	18.50
Heavy steel scrap, P'gh.	20.00	20.00	19.00	16.50
Heavy steel scrap, Phila.	**19.00**	18.00	16.50	15.50
Heavy steel scrap, Ch'go.	**17.50**	17.25	16.50	14.50
No. 1 cast, Pittsburgh	**18.50**	18.00	18.00	19.00
No. 1 cast, Philadelphia	**18.50**	18.00	17.50	20.00
No. 1 cast, Ch'go (net ton)	18.00	18.00	17.50	19.00
No. 1 RR. wrot. Phila.	**19.00**	18.50	17.50	18.00
No. 1 RR. wrot. Ch'go (net)	**16.00**	15.50	14.50	13.00

Coke, Connellsville,				
Per Net Ton at Oven:				
Furnace coke, prompt	**$3.15**	$3.00	$3.00	$4.00
Foundry coke, prompt	**4.25**	4.00	4.00	5.00

Metals,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	14.00	14.00	13.50	13.25
Electrolytic copper, refinery	13.75	13.75	13.25	12.87½
Zinc, St. Louis	*6.85*	6.92½	6.52½	6.37½
Zinc, New York	*7.20*	7.27½	6.87½	6.72½
Lead, St. Louis	*8.60*	8.87½	8.75	6.70
Lead, New York	9.00	9.00	9.00	7.00
Tin (Straits), New York	*54.25*	54.75	52.00	47.00
Antimony (Asiatic), N. Y.	*14.50*	15.00	11.75	9.00

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market report on other pages.

THE IRON AGE Composite Prices

Nov. 25, 1924, Finished Steel, 2.517c. Per Lb.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 88 per cent of the United States output of finished steel.

Nov. 18, 1924,	2.474c.
Oct. 28, 1924,	2.460c.
Nov. 27, 1923,	2.775c.
10-year pre-war average,	1.689c.

Nov. 25, 1924, Pig Iron, $20.54 Per Gross Ton

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham.

Nov. 18, 1924,	$19.88
Oct. 28, 1924,	19.46
Nov. 27, 1923,	21.86
10-year pre-war average,	15.72

1924 to Date High	1924 to Date Low		1923 High	1923 Low
2.789c., Jan. 15	2.460c., Oct. 14	Finished Steel	2.824c., April 24	2.446c., Jan. 2
$22.88, Feb. 26	$19.21, Nov. 3	Pig Iron	$20.86, March 20	$20.77, Nov. 20

that there has been a very substantial advance in the cost of coating metals in the past year. On sheets this interest is continuing its recent prices on blue annealed, electrical and long ternes, but its new price on black sheets is $2 per ton higher and on galvanized and automobile body sheets the new quotations reflect an increase of $3 per ton. The new prices on wire products and sheets do not apply to tonnage for shipment over the remainder of this year, but the advance has had a very favorable effect upon business. The American Sheet & Tin Plate Co. has taken about all the sheet business it can possibly produce over the remainder of the year and the bookings of independent producers make quite as favorable a showing. In all directions the tendency has been very marked on the part of consumers to squeeze in as much business as possible at the low figure and specifications are being made with little attention to the inventory season, presumably because the material can be shown at a profit in the year-end statement.

Recent advances in plates, shapes and the bars and in some of the lighter forms of steel, such as strips, have become fairly solidified within the past week. On bars and shapes 2c. base, Pittsburgh district mills, really appears to be as low as any of the mills now will go for business. It is noted, however, that there is no attempt to secure more at the moment, and in a general way the price represents the top and bottom of

the market except so far as deliveries of older purchasers are concerned. Some of the outside producers of plates who would have to absorb freight to come into Pittsburgh are talking 2c., but generally, the market on new business is right at 1.90c. Rising tendency in the finished products naturally lends a measure of firmness to the prices of semi-finished material.

Generally quotations are higher on pig iron since the recent wave of buying has put the producers in a more comfortable position and made them less anxious for orders except at prices that will show some profit. The furnace coke market has been strengthened by the stronger tendency in pig iron and two fair-sized contracts have been closed in the past week at $3.50 per net ton at ovens, an advance of 25c. a ton over the price of some earlier deals.

The scrap market is no exception to the common tendency in the primary materials. Heavy melting grade is sold as high as $21, and dealers are paying almost as much as that to cover against sales without being obliged to ship from their yards.

Mill and furnace operations still are headed upward. Ingot capacity in this and nearby districts now is very close to 70 per cent engaged, while the general average of finishing mill capacity is that high, if not a little higher. Sheet and bar mills are running above 75 per cent. Of the 139 blast furnaces in this and nearby districts, 78 now are in production as against 73 at the beginning of the month.

Pig Iron.—Although the market is quieter following its recent buying flurry, practically all grades have moved up in price because the recent activity has so materially benefited the position of producers. No large sales are reported, but on foundry iron $20.50 Valley furnace appears to be as low as any recent business has been done and there have been sales at $21 Valley furnace for base grade. This is a clear advance of $1 a ton over the price of a week ago. We note a sale of 1000 tons of Bessemer iron at $21 Valley furnace and that measures the bottom of the market this week since steel companies appear to have none of this grade for sale and there is only one merchant producer having supplies for market. The market on basic iron has strengthened materially since a week ago and that grade no longer is available at less than $20 Valley furnace and that price is limited to tonnages for each delivery. One sale of several thousand tons for first quarter shipment was at a price of $20.50 Valley furnace and evidently that is as low as iron of this grade for that delivery can be had, as the sale made at that price was subject to competition. Malleable iron is quotable from $20.50 to $21 with sales noted at both prices. The Jones & Laughlin Steel Corporation is lighting a furnace of its Eliza group this week which will give that company nine of 12 furnaces in production.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being $1.76 per gross ton:

Basic	$20.00 to $20.50
Bessemer	21.00
Gray forge	20.00 to 20.50
No. 2 foundry	20.50 to 21.00
No. 3 foundry	20.00 to 20.50
Malleable	20.50 to 21.00
Low phosphorus, copper free	28.00 to 29.00

Ferroalloys.—Both domestic and British makers of ferromanganese still are holding firmly to $105, seaboard base, and there are no indications that this price can now be bettered, as all producers are well sold up and disposed to hold out for the full quotation in an effort to bring up their sales price average. No sales yet are noted in this district at higher than $100, seaboard, but it is reported that $105 has been obtained on some recent business in the East. Makers of 50 per cent ferrosilicon are quoting $80, delivered, for 1925 contracts, but the test of that figure has not yet been possible, as the campaign for business has not been started. Very steady demand is noted for spiegeleisen, with some users of ferromanganese seeking supplies of the former on account of price. The advance in ferromanganese from the recent low point is a matter of $12.50 to $15 a ton, while spiegeleisen still is available at the low prices of the year. Prices are given on page 1447.

Semi-Finished Steel.—Price ideas of producers are slightly firmer, but there has not been enough demand to permit of any lifting of quotations. Large billets and slabs still are priced at $35.50 and sheet bars and small billets at $37, all Pittsburgh or Youngstown. First quarter tonnages today could not be placed at less than these prices, but it is believed there would be concessions on orders carrying delivery over the remainder of this year, as makers are not overly well supplied with such business. There have been suggestions of an advance in forging quality billets on the ground that the present differential of $5 per ton does not cover the extra expense of producing them, but definite action is yet to take place. The American Steel & Wire Co. in an announcement late last week of an advance of $2 a ton in wire products included rods. That makes the price of that company $48, base, f.o.b. Pittsburgh or Cleveland mills, and $50 at Chicago districts mills. Independent companies have been taking business as low as $45 and have not yet formally gone along with the advance announced by the leading producer. The effort of producers of skelp is to get 2c., but 1.90c. has disappeared as sales price. Finished steel business is better than usual, since the proximity of the inventory period is less of a restrictive factor on demand, as there is general acceptance of the idea that prices will not be lower at the end of the year. Steel works operations are increasing and now are estimated at close to 70 per cent of capacity in this and nearby districts. Prices are given on page 1447.

Wire Products.—The American Steel & Wire Co., as of Nov. 19, advanced prices of all wire products, including woven wire fence, $2 per ton, putting the market to $2.60, base, per keg, for bright nails and $2.85, base, per 100 lb. for plain wire. The company is honoring all contracts in existence at the time of the advance and taking specifications against them at the old prices. Independent companies have begun withdrawing quotations preparatory to moving to the higher bases. The tendency of the latter is to first accumulate a backlog of business and with an advance in sight this has been relatively simple. The market this week is properly quotable at a range of the old and new quotations, since the old prices have not disappeared and the new prices have found only a limited basis in sales. All makers are better provided with business than before since the fore part of the year and mill operations are increasing. Prices are given on page 1446.

Rails and Track Supplies.—Recent advance in spikes by local makers has been followed by makers in other districts and the market now is fairly defined at $2.80 to $2.95, base, per 100 lb. f.o.b. mill, for large spikes and $3.10 to $3.20, base, for small ones. Tie plates are quotable from 2.35c. to 2.50c. per lb., but it is stated that the lower figure applies only on large lots. The New York Central spike requirements were the largest recently up for bids, but general demand is reported to be better than it was recently. Light rails still move slowly and buyers are not having much trouble in placing billet rails at 1.80c., base, mill, although lately there has been some effort by makers to secure more. Prices are given on page 1446.

Tubular Goods.—Demand for merchant pipe is steadily expanding and if the mills were having the same experience in oil well goods they would have little cause for complaint about business. The oil situation is looking better in spots and the rising trend of industrial activity spells a greater demand for fuel oil, but conditions generally are not favorable to plans for active drilling and demand for oil country pipe lags. Bookings of one maker of steel pipe so far this month exceed those of the same period by about 12½ per cent, this almost entirely in merchant pipe. October was the best month of the year with the leading interest and its business so far this month is running somewhat ahead of last month, but the gain is in merchant pipe. Boiler tubes are finding a better sale, but the improvement has not been sufficient to produce price stability. Discounts are given on page 1446.

Sheets.—American Sheet & Tin Plate Co., as of Nov. 25, opened its books for first quarter business at 3.60c., base, for black; 4.75c., base, for galvanized; 2.70c., base, for blue annealed; 4.75c., base (No. 22 gage), for automobile body sheets, and 4.90c., base, for long ternes. Compared with the former prices of this company, the new prices show an advance of $2 a ton in black sheets and $3 a ton in galvanized and automobile body sheets; other grades are at the prices the company has been observing for some time and no change has been made in electrical sheets or specialties. As compared with the prices at which business has been done by some of the independents, the new prices are up $4 to $5 per ton, sales of blue annealed sheets having been made in the past week as low as 2.50c., base, Pittsburgh, this on a sizable lot for delivery in the Pittsburgh district. In other grades, equally low prices have been named by some makers anxious to secure backlogs. Several of the independent companies anticipated the prices of leading interest on first quarter business and for that delivery, it is expected other independents will name the same prices. Consumers have had ample time to cover their requirements over 30 to 60 days at the old prices and the mills generally now have enough business to carry them comfortably well over the turn of the year. With prices moving up little trouble is had in securing specifications; indeed, some buyers are trying to work in more tonnages at the old prices than the mills will accept. Prices are given on page 1446.

Tin Plate.—The American Sheet & Tin Plate Co. has fulfilled more recent expectations by naming present prices for first half of 1925 business. The announcement is dated Nov. 25, and continues $5.50, per base, box, Pittsburgh, as the price of standard cokes, with Gary and Elwood, Ind., on a base of $5.60. The increase in the cost of pig tin as compared with that of a year ago, when the present tin plate price was first named, has been offset apparently in costs by lower steel and labor charges. Higher metal prices find partial reflection in the new prices on terne plate. Price of the metal in the coating on short or roofing ternes is 4c. per lb. higher than a year ago, but 40-lb. I.C. ternes, instead of advancing $1.60 per package, advance only $1 in the new schedule, due to cheaper steel and labor charges. Prices of the American Sheet & Tin Plate Co. are f.o.b. Morgantown, W. Va., instead of f.o.b. Pittsburgh, as formerly. This means that Pittsburgh consumers will have to pay the full freight of 19c. per 100 lb. instead of the arbitrary charge of 5c. per 100 lb. over the base price. Independent makers of short ternes in this immediate district still are quoting on an f.o.b. Pittsburgh base, or on a mill base with Pittsburgh rate of freight added to destination.

Cold-Finished Steel Bars and Shafting.—A belief among buyers that prices will not be lower has prompted freer ordering and makers here now report a better order book than they have had in some time. A report that the American Steel & Wire Co. had included screw stocks in its recent advance of $2 a ton in wire products and was quoting 2.85c., base, Cleveland, and 3c., base, Worcester, Mass., does not find substantiation. At last accounts the company still was quoting 2.75c. and 2.90c., respectively, at those points. Ground shafting remains at 3.10c., base, f.o.b. mills, for lots of a carload or more.

Iron and Steel Bars.—A price of 2c. base, Pittsburgh, for steel bars has practically disappeared except as a price on old orders. On new business all makers are holding firmly to 2.10c. base and a very fair amount of business has been taken for early 1925 delivery at that price. Order books on bars are the best since the fore part of the year and mill operations are making a showing quite in keeping with that condition. Demand for iron bars is improving in this district and the market is firmer in tone though not quotably higher. Prices are given on page 1446.

Structural Material.—Mills in this district are comfortably obligated and are pretty firm at 2.10c. on new business. Considerable activity marks the fabricated steel market because investors seem to have come to the conclusion that they cannot do better by waiting and there is anxiety on the part of the fabricating shops for business to provide a good winter's engagement. Prices consequently, are more favorable to the investors than they are likely to be when present plain material prices become the basis of bids. Plain material prices are given on page 1446.

Plates.—This market is growing stronger, not because of a big demand but rather because producers in this district also make other lines of steel and can better afford to carry plate mills idle than they could recently when there was not so good a market for other products. Prices below 1.90c. base, Pittsburgh, have generally disappeared and such business as is being done usually is at that price. Some of the outside mills have to absorb freight coming into Pittsburgh and are disposed to ask a higher price. Prices are given on page 1446.

Hot-Rolled Flats.—The market still is in process of price readjustment. The effort of producers is to establish material 3 in. and narrower at 2.50c. base, with 3 to 10 in. at 2.40c. base and material wider than 10 in. at 2.25c. base. There are irregularities due to the fact that some producers want to keep their large customers satisfied, but in a general way the new prices are being maintained by most manufacturers. General business is better than it was as recent as a month ago, but virtually all producers are open for tonnages for delivery over the remainder of the year. Prices are given on page 1446.

Cold-Rolled Strips.—All makers have moved to a base of 4.15c., Pittsburgh, for first quarter business and the report is that buyers are not resisting the advance to any considerable degree. There is a pretty strong effort, however, to get tonnage on makers' books at 4c. for delivery over the next 30 days.

Bolts, Nuts and Rivets.—Buyers are specifying only moderately well against fourth quarter contracts for bolts and nuts, apparently reserving as large a supply as possible for specification toward the end of the quarter. Such a practice has worked out very nicely for buyers in past two quarterly periods, giving them low priced supplies long after the published quotations have moved upward. Prices for first quarter will be announced soon after the turn of next month and are expected to be higher than prevailing ones. The rivet market is holding fairly well on local and eastern business, but going west there is at least some equalization of freight. Prices and discounts are given on page 1447.

Coke and Coal.—Coke prices have stiffened perceptibly in the past week, especially on first quarter of 1925 tonnages. Latest sales for that delivery have been at $3.50 per net ton at ovens, the contracts including the wage clause providing for a higher price in case the operator is forced to return to the wage scale of the H. C. Frick Coke Co. from which independent producers early this year departed to the extent of about 30 per cent. A northern Pennsylvania blast furnace company paid that price for 12,000 tons a month, while a Pittsburgh steel company, ordinarily self contained, paid the same price for 18,000 tons a month for December, January and February shipments. A Valley furnace interest is seeking 12,000 tons a month for first quarter and 10,000 tons a month is wanted by two Eastern furnaces. Between business booked and in sight, producers have very firm price ideas, some asking as high as $3.75. Supplies of spot furnace coke have grown pretty scant lately and sales are noted at $3.15 to $3.25, an advance of 10c. to 15c. a ton over recent levels. Spot foundry coke also is stronger and about 25c. higher than a week ago. First quarter and half tonnages are quoted at $4.50 to $5 for good brands of 72-hr. fuel and from $5 to $6 for the brands in which there is extra expense in their preparation. Steam slack coal is a little firmer under smaller offerings, but the coal market generally is dull and weak. Prices are given on page 1447.

(*Concluded on page* 1445)

Chicago

Pig Iron Buying Continues—Sentiment Stronger Than Steel Business

CHICAGO, Nov. 25.—Another active week in pig iron in which sales aggregated fully 125,000 tons has been followed by a price advance of 50c. a ton. Sales of the heavier forms of finished steel have also been heavy, with fully 30 per cent of the bookings coming from the railroads and railroad car builders. Tonnage from the structural steel fabricators and concrete bar dealers has bulked nearly as large, and this is not surprising in view of the large amount of building now being released.

Fabricating awards have been unusually heavy, aggregating nearly 53,000 tons, and a large amount of pending work is about to be placed. The concentration of buying at this time is due, of course, to the desire for protection in a rising market. In fact, a survey of recent developments suggests that the current buying movement is mainly the result of psychological causes. The reaction from pre-election conservatism was so pronounced that, as one keen observer expressed it, industry mistook better sentiment for better business. As a matter of fact, however, actual consumption of iron and steel has shown no expansion comparable with the increase in buying. Expectations of improvement in business furnished the ideal stimulus for broader buying and once the movement was under way, it was only necessary for producers to advance their prices to induce the trade to cover their needs for a considerable period. In fact, so far as finished steel is concerned, the principal effect of advances has been to drive in business at the old prices.

Although expansion in consumption has probably not kept pace with buying, the feeling of confidence in the future is not less pronounced than heretofore. It is still firmly believed that railroads will release broader programs of additions and betterments, a view which finds support from week to week in their purchases of steel and equipment. The Santa Fe has placed 86,000 tons of rails and 25,000 tons of bridge work, while the Chicago & North Western has ordered 3200 freight cars. Building activity shows surprising buoyancy and reports from the agricultural districts indicate better farmer buying, which is being reflected in more liberal purchases of farm equipment, steel pipe and wire products.

The latest advances in finished steel commodities have been $2 a ton on wire products and black sheets and $3 on galvanized sheets. Following the recent increase in the price of soft steel bars, bar iron has actually declined, thereby introducing a disturbing element in an otherwise favorable market situation.

The heavier commitments of producers have enabled them to expand their operations still further. A leading interest has blown in another blast furnace at South Chicago, increasing the number of active steel works stacks to 22 out of a total of 34 in the district. The same producer's steel output has advanced to 75 per cent of capacity, while a large independent remains on an 80 per cent basis. The blast furnace which the Inland company is rebuilding at Indiana Harbor is expected to be ready to blow in by Jan. 1. Merchant pig iron production has been increased through the blowing in of a Federal furnace.

Pig Iron.—Buying has shown no let up, and sales during the week are estimated at from 125,000 to 150,000 tons. It is believed that fully 75 per cent of the merchant iron capacity of this district is now committed for first quarter. Some tonnage has also been booked for the first half. To meet the need for additional active producing capacity, a Federal furnace has been blown in. Active merchant units now include two Iroquois stacks, the Federal furnace, a Mayville furnace and the Zenith stack. The strength of the market has again found expression in a 50c. advance, the present price being $21.50, local furnace. That demand is still active is indicated by several unclosed inquiries for 2000 tons of foundry and malleable, as well as numerous lots of 500 and 1000 tons each. A steel works furnace which has been selling merchant iron is heavily sold and is now quoting a minimum of $21, base, Chicago stack. Southern iron for all rail shipment has been advanced and now ranges from $18.50 to $19, base, Birmingham. A few sales have been made at both prices. Southern iron for barge and rail shipment continues to be sold at unchanged prices. Sales of charcoal have been heavy not only in this territory but throughout the country, and an advance of $1 a ton is momentarily expected. Silvery has advanced $1 a ton and low phosphorus is stronger. Electric ferrosilicon, 14 to 16 per cent, which has been weak for some time, has gone up to a minimum of $43.42, delivered.

Quotations on Northern foundry, high phosphorus, malleable and basic iron are f.o.b. local furnaces and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards.

Northern No. 2 foundry, sil. 1.75 to 2.25	$21.00 to $21.50
Northern No. 1 foundry, sil. 2.25 to 2.75	22.50
Malleable, not over 2.25 sil.	21.00 to 21.50
Basic	21.00 to 21.50
High phosphorus	21.00 to 21.50
Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago	29.04
Southern No. 2 (barge and rail)	23.18
Southern No. 2, sil. 1.75 to 2.25	24.51 to 25.01
Low phos., sil. 1 to 2 per cent, copper free	32.50
Silvery, sil. 8 per cent	35.29
Electric ferrosilicon, 14 to 16 per cent	43.42

Ferroalloys.—About 2000 tons of spiegeleisen has been sold in this market within the past two weeks, and prices have advanced to a minimum of $32, Eastern furnace, or $40.50 delivered. A few small sales of ferromanganese have been made at the new base of $105, seaboard. Next year contracts for 50 per cent ferrosilicon are being closed at $82.50, delivered, an advance of $7.50 a ton.

We quote 80 per cent ferromanganese, $112.56, delivered; 50 per cent ferrosilicon, for 1925 delivery, $82.50, delivered; spiegeleisen, 18 to 22 per cent, $40.58, delivered.

Plates.—Specifications from car builders are liberal and more tonnage is in prospect from that quarter. For the Chicago & Northwestern cars fully 39,000 tons of steel will be required and with the Southern Pacific likely to come into the market for 15,000 cars an additional 150,000 tons will have to be placed. Although the oil fields have not been an important source of plate tonnage of late, the Kansas City Structural Steel Co. has booked 2000 tons of tankage for Cosden & Co., and the steel will be rolled here.

The mill quotation is 2.20c., Chicago. Jobbers quote 3.10c. for plates out of stock.

Structural Material.—Fabricating awards in this district during the week were exceedingly heavy, aggregating nearly 53,000 tons. The three largest lettings, bridge work for the Santa Fe, 25,000 tons; the Jewelers' Building, Chicago, 7500 tons, and Illinois Central shop buildings, 6400 tons, all went to the American Bridge Co. A number of large dormant projects have been revived, among them the Stevens Hotel, Chicago, 17,000 tons, and the Holton Street viaduct, Milwaukee, 2500 tons. In view of the upward tendency of the plain material market, the advantage of placing work at this time is generally recognized. As fabricators' shops fill up, the low bidding which has been the rule throughout most of the year will disappear.

The mill quotation on plain material is 2.20c., Chicago. Jobbers quote 3.10c. for plain material out of warehouse.

Bars.—In the face of a generally advancing steel market, bar iron has declined to 2c., Chicago, for both spot and first quarter shipment. The new price, which is quoted by one of the leading producers of the commodity, is a source of surprise, furthermore, because of the steady advances in busheling and wrought scrap. When viewed in the light of the concessions made on finished steel prior to the recent advance, it is evidently intended to drive in tonnage, something which was not possible so long as soft steel was selling at considerably less than bar iron. Just what effect the

decline in bar iron will have on mild steel bars is difficult to forecast at the moment. While the mills rolling the latter product are now fortified with substantial backlogs carrying them into next year, adherence to the new price of 2.10c., Chicago, is not as inflexible as one might expect. Within the past week several buyers having large tonnages to offer have been able to place them at 2.05c. and 2c., Chicago. The bulk of orders, however, appears to command 2.10c. Reinforcing bar dealers have bought heavily for first quarter, one mill alone having booked 18,000 tons from that class of trade during the week. Business from the farm implement and automobile industries is also improving. Betterment in the automotive situation is having its effect on demand for alloy steel bars, although prices are unchanged, with ruling quotations at Chicago $2 a ton above those at Pittsburgh. Business in rail steel bars is gaining, but prices are irregular, ranging all the way from 1.90c. to 2.10c., f.o.b. mill. It is probable that the concessions are being offered for the time being as an inducement to customers to protect themselves prior to an advance.

Mill prices are: Mild steel bars, 2.10c.; common bar iron, 2c., Chicago; rail steel, 2c., Chicago mill.

Jobbers quote 3c. for steel bars out of warehouse. The warehouse quotations on cold-rolled steel bars and shafting are 3.80c. for rounds and 4.30c. for flats, squares and hexagons; 4.15c. for hoops and 3.65c. for bands.

Jobbers quote hard and medium deformed steel bars at 2.60c.

Sheets.—The American Sheet & Tin Plate Co. has announced advances of $2 a ton on black and $3 on galvanized, while blue annealed remains unchanged. It is understood that buyers were given ample opportunity to protect themselves for a considerable distance ahead at the old figures. A few of the independents have adopted the new prices, but the local independent has not yet taken such action.

Chicago delivered prices from mill are 3.65c. to 3.75c. for No. 28 black, 2.85c. for No. 10 blue annealed, 4.75c. to 4.90c. for No. 28 galvanized. Delivered prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than the Chicago delivered prices.

Jobbers quote f.o.b. Chicago: 3.80c. base for blue annealed, 4.50c. base for black, and 5.50c. base for galvanized.

Wire Products.—Following several weeks of sharp competition which developed numerous price irregularities, the market appears to have been stabilized through an advance of $2 a ton by the Steel Corporation subsidiary. Buyers are understood to have covered heavily at the old figures, so that the new prices will appeal largely to stragglers and on such additional tonnage as may have to be placed if consumer demand continues to increase. The bulk of the trade, however, is probably well covered through the winter at the former quotations. For mill prices see page 1446.

We quote warehouse prices f.o.b. Chicago: No. 8 black annealed, $3.15 per 100 lb.; common wire nails, $3.25 per 100 lb.; cement coated nails, $2.55 per keg.

Rails and Track Supplies.—The Santa Fe has placed orders for 85,600 tons of rails, distributed as follows: 70,000 tons of Colorado Fuel & Iron Co., 7600 tons to Bethlehem Steel Co. and 4000 tons each to Illinois Steel Co. and Inland Steel Co. The Nickel Plate is expected to take early action on its inquiry for 20,000 tons of rails and, in addition, will buy rails for its subsidiary, the Clover Leaf. The St. Louis-San Francisco has ordered 15,000 tons of rails from a company not announced. Local mills have booked 30,000 tons of tie plates, spikes and bolts. The Baltimore & Ohio has ordered 4000 tons from Illinois Steel Co. and 20,000 tons from Carnegie Steel Co. The Rock Island is expected to take early action on from 30,000 to 35,000 tons.

Standard Bessemer and open-hearth rails, $42; light rails, rolled from billets, 1.80c. to 1.90c., f.o.b. makers' mill.

Standard railroad spikes, 2.90c. mill; track bolts with square nuts, 3.90c. mill; steel tie plates, 2.35c., f.o.b. mill; angle bars, 2.75c., f.o.b. mill.

Jobbers quote standard spikes out of warehouse at 3.45c. base, and track bolts, 4.45c. base.

Bolts, Nuts and Rivets.—Demand for bolts and nuts is improving with the placing of better specifications as well as fresh orders. Business from the farm implement industry has shown slow but steady gains and it is now estimated that operations among manufacturers in that classification range from 60 to 70 per cent. The railroads are heavier buyers and automobile builders are releasing attractive orders for bolts and nuts as well as rivets. Discounts on bolts and nuts are steady, although occasional shading is still reported. Sellers are not yet willing to book first quarter business, evidently on the theory that, if they wait, the market may sustain an advance. In fact, there is already some talk of raising prices. For mill prices see page 1447.

Jobbers quote structural rivets, 3.65c.; boiler rivets, 3.85c.; machine bolts up to ⅞ x 4 in., 55 per cent off; larger sizes, 55 off; carriage bolts up to ⅞ x 4 in., 50 off; larger sizes, 50 off; hot pressed nuts, square, tapped or blank, $3.50 off; hot pressed nuts, hexagon, tapped or blank, $4 off; coach or lag screws, 60 per cent off.

Cast Iron Pipe.—Bids taken on 1230 tons of 12-in. by Detroit yesterday were similar to those taken at Park Falls, Wis., a week ago. James B. Clow & Sons, bidding on only 600 tons, filed a figure of $38.80, base Birmingham. The Lynchburg Foundry Co., which bid on a per foot basis on the entire tonnage, entered a quotation of approximately $1 higher. The National Cast Iron Pipe Co. quoted $40, base Birmingham. Detroit takes figures on 2000 tons of 6- and 16-in., Dec. 3. The United States Cast Iron Pipe & Foundry Co. will supply 250 tons for Chicago Heights, Ill. Although municipal purchases of pipe have been light, sellers find encouragement in better prospects for private buying. The Detroit Gas Co. has entered the market for 12,000 tons of gas pipe.

We quote per net ton, f.o.b. Chicago, as follows: Water pipe, 4-in., $51.20 to $52.20; 6-in. and over, $47.20 to $48.20; Class A and gas pipe, $5 extra.

Billets.—Although local mills are quoting $37 to $38 base, sales at those figures have been confined to small lots for forge shops. The extra for forging quality is $5 above base. Large sales of billets, however, have brought out considerably lower prices. Within the past ten days two lots of 5000 tons each of 1¾-in. square rerolling billets have been placed at $34 per gross ton, Chicago.

Reinforcing Bars.—In sympathy with the recent advance in mill prices, reinforcing bars have advanced $2 a ton to 2.60c. Chicago warehouse. Notwithstanding the fact that a large amount of tonnage was placed prior to recent price advances, lettings for the week were heavy. For Illinois State highway work 1400 tons of reinforcing was distributed among four dealers. The steel for the Jewelers Building, Chicago, amounting to 800 tons, was awarded to the Truscon Steel Co. The city of Minneapolis has placed 300 tons for a sewer, the largest portion of which, Section A, involving 1700 tons, is now held up pending the passage of a bond issue.

Lettings include:

Illinois State highway work, 1400 tons, of which 300 tons each was awarded to Olney J. Dean & Co., the Concrete Steel Co. and the Kalman Steel Co., and 500 tons to the Truscon Steel Co.

Jewelers Building, Chicago, 800 tons to Truscon Steel Co.

Wellington Arms Hotel, Chicago, 400 tons to Concrete Steel Co.

Sections of municipal sewer, Minneapolis, 200 tons to American System of Reinforcing.

Section of municipal sewer, Minneapolis, 104 tons to Joseph T. Ryerson & Son.

Austin Y. M. C. A. building, Chicago, 200 tons of rail steel to Calumet Steel Co.

Englewood Y. M. C. A. building, Chicago, 200 tons of rail steel to Calumet Steel Co.

Mount Vernon Car & Mfg. Co., foundry building, Mount Vernon, Ill., 100 tons to Concrete Engineering Co.

Churchill Drug Co., warehouse, Cedar Rapids, Iowa, 350 tons to Concrete Engineering Co.

Pending work includes:

South Water Street Removal Co., new market center for provision merchants, Chicago, 200 tons, general contract awarded to Blome Sinek Co., Chicago.

Women's Athletic Club, Chicago, 200 tons, Caisson work awarded to Wells Brothers Construction Co.

National Kindergarten College, Evanston, Ill., 100 tons.

Stevens Hotel Building, Chicago, 2000 tons, figures not yet taken.

Cold-Finished Steel Bars and Shafting.—The expected advance in cold-finished steel has not yet materialized, but is believed to be imminent. The ruling market remains 2.70c., Chicago mill.

Steel Pipe.—While there have been no intimations of possible advances in pipe, jobbers are no doubt im-

(*Concluded on page* 1445)

New York

Pig Iron Market Very Strong—Prices Higher —Heavy Steel Mill Specifications

NEW YORK, Nov. 25.—Buying of pig iron has continued at about the same rate as for the preceding week, the tonnage sold being from 35,000 to 40,000; but the demand is now decreasing and pending inquiry is not large. Quotations have been marked up rapidly. At Buffalo $22 furnace is now the lowest quotation named on No. 2 plain with dollar differentials for the higher silicons. The increase in the differentials from 50c. to $1 is due to the realization of furnace operators that they have been selling the higher silicons at prices too low and have been encouraging the increasing use of scrap, which can be carried in the melt with high silicon pig iron. In eastern Pennsylvania, quotations now range from $22.50 to $23 for No. 2 plain and very little iron to be had. One eastern Pennsylvania furnace which came into the market at $22 sold almost immediately all the iron it cared to dispose of and is now out of the market. The sales of the week included one of 15,000 tons to a buyer whose name was not announced; 10,000 tons to another melter in two lots for the first half of 1925; an 1,800-ton lot for this year, and numerous smaller tonnages. An important feature of the week has been the fact that the advance in prices of domestic irons has been accompanied by fully as great an advance in foreign irons. The European irons are from $2 to $3 higher than recent quotations and are likely to find it difficult to compete with the domestic product. Charcoal iron is selling on a basis of $26 Lake Superior furnace, plus the freight to New York, $8.19. An advance in this price is expected at a not far distant date.

We quote delivered in the New York district as follows, having added to furnace price $2.27 freight from eastern Pennsylvania, $4.91 from Buffalo and $5.44 from Virginia:

East. Pa. No. 2, sil. 1.75 to 2.25	$24.77 to $25.02
East. Pa. No. 1X fdy., sil. 2.75 to 3.25	25.77 to 26.02
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	25.02 to 25.52
Buffalo, sil. 1.75 to 2.25	26.91
No. 2 Virginia, sil. 1.75 to 2.25	30.44 to 31.44

Ferroalloys.—Sales of small lots, including carloads, of ferromanganese the past week are estimated to have totaled close to 1000 tons at the full price of $105, seaboard basis. Inquiries are made up only of similar lots. Further large sales of spiegeleisen have been made at $31 to $33, furnace, for the higher grade, depending on the quantity and delivery. Inquiries are light and made up only of small and carload lots.

Cast Iron Pipe.—In view of the satisfactory position of water pipe makers, and the upward trend in pig iron and scrap prices, it seems to be doubted that the usual $1 to $2 per ton concession for winter delivery will be offered. Buyers in some cases seem desirous of purchasing at present prices and carrying pipe over until spring, in expectation of advances. Present quotations are reported firm. We quote per net ton, f.o.b. New York, in carload lots, as follows: $55.60 to $56.60; 4-in. and 5-in., $60.60 to $61.60; 3-in., $70.60 to $71.60 with $5 additional for Class A and gas pipe. Soil pipe makers report a continuation of the recent buying movement despite the firmness of discounts. But little business is being booked for delivery beyond the first of the year and the few orders being accepted for this advanced shipment are for January only. We quote discounts of both northern and southern makers, f.o.b. New York, as follows: 6-in., 42½ to 43¾ per cent off list; heavy, 52½ to 53¾ per cent off list.

Warehouse Business.—No material change is seen, unless it is that prices are somewhat firmer. The volume of transactions, though good, is nothing like what was expected two weeks ago. Blue annealed sheets have been subject to considerable shading of prices, the most notable case being for a large tonnage, but galvanized sheets are moving in good volume and prices are firm. There are still some soft spots, particularly in plates and black sheets, business in the former being almost nil. Prices on sheet zinc are up ½c. and the solder group has gone up 1c. Prices are given on page 1462.

Finished Iron and Steel.—Sustained interest on the part of consumers has added such firmness to market prices that apparently only attractive orders for steel bars may be placed at 2c., Pittsburgh basis. As yet no great tonnage has been placed at 2.10c. Similarly, steel plates are firm at 1.80c., but new orders are not many; some sellers are holding out for 1.90c. New buying of steel shapes may possibly still be done at 2c., with 2.10c. the quoted market. Some protection options to buyers at prices ruling before the upturn are yet to be covered. In some cases it appears that under special conditions contracts have been written for three months, which thus carry some relatively low priced business into February deliveries. No special concern is shown over next year's needs. Steel mill operations have expanded and current volume of specifications, with at least two mills, averages a little more than twice capacity, and some producers expect an 85 per cent rate of production within a week or two. There is no denying that buyers are showing increased interest, even if not rushing to buy, and this is now extended to pipe, apparently with the idea that pipe prices may advance. Heavy sales of tin plate are reported following the reaffirmation of a base price of $5.50. It is generally understood that the leading interest in sheets is now asking 4.75c. for galvanized sheets, a $3 per ton advance, 3.60c. for black sheets, $2 up, and 2.70c. for blue annealed sheets, the level which has been subject to considerable shading. Cold finished steel, it is rumored, will be advanced by a number of makers to 2.80c. The trade is looking for a marked expansion in agricultural implement buying, which with a round volume of railroad, automobile and building demand is calculated to give the market sustained stability.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.34c. to 2.44c.; plates, 2.14c. to 2.24c.; structural shapes, 2.24c. to 2.44c.; bar iron, 2.34c.

Old Material.—It is still largely a brokers' market, as all grades rise to higher levels. No. 1 heavy melting steel continues fairly active, but purchasing is still confined mostly to brokers fulfilling contracts. With certain exceptions strictly No. 1 steel is being purchased at $19 delivered eastern Pennsylvania consumers. For a consumer in Pottsville, $18.50 is offered and $18 has been the offering price for delivery to Conshohocken in the past week, but little seems available at this price. A consumer with a low freight rate is receiving $18 steel. While there are plenty of rumors of higher prices being paid on various grades, it is difficult to substantiate them. Borings and turnings seem to be still quotable at $12.50 to $13.50, delivered eastern Pennsylvania, although slightly higher prices are claimed to have been offered. Stove plate delivered Harrisburg or Phoenixville is unchanged at $15.50 per ton, but for delivery to a local New Jersey consumer taking a $2.02 freight rate, $14.50 per ton is being paid. Specification pipe is stronger and to fulfill contracts brokers are paying $17 and in some cases $17.50 per ton, delivered. Chemical borings are up another dollar, $19 delivered about representing the market today. It is reported that a large Bridgeport consumer is about to come into the market for a tonnage of stove plate.

Buying prices per gross ton New York follow:

Heavy melting steel, yard	$13.00 to $13.50
Heavy melting steel, railroad or equivalent	15.00 to 15.50
Rails for rolling	15.50 to 16.00
Relaying rails, nominal	24.00 to 25.00
Steel car axles	19.50 to 20.00
Iron car axles	26.00 to 28.00
No. 1 railroad wrought	15.00 to 15.50
Forge fire	11.00 to 11.50
No. 1 yard wrought, long	14.00 to 14.50
Cast borings (steel mill)	10.75 to 11.25
Cast borings (chemical)	15.00 to 16.00
Machine shop turnings	11.00 to 11.50
Mixed borings and turnings	10.00 to 10.50
Iron and steel pipe (1 in. diam., not under 2 ft. long)	13.25 to 13.75
Stove plate	11.75 to 12.75
Locomotive grate bars	12.50 to 13.00
Malleable cast (railroad)	14.00 to 14.50
Cast iron car wheels	15.00 to 16.00
No. 1 heavy breakable cast	13.00 to 13.50

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast	$16.00 to $16.50
No. 1 heavy cast (columns, building materials, etc.), cupola size	14.00 to 14.50
No. 2 cast (radiators, cast boilers, etc.)	13.00 to 13.50

St. Louis

Pig Iron Buying Continues at Satisfactory Rate—Melt Increasing

ST. LOUIS, Nov. 25.—While somewhat less aggressive than earlier in the month, purchasing of pig iron continues in excellent volume. Recent sales reported total close to 15,000 tons of all varieties and grades. Of this amount the leading local producer disposed of 8500 tons, including one lot of 3000 tons to a melter in the district proper and 2000 tons to a nearby Illinois steel maker. There is still a considerable amount of iron to be bought for first quarter of 1925 delivery, but a number of the leading users are reluctant to augment their commitments just now because of desire to hold down stocks at inventory period. Prices are irregular, but the trend is decidedly upward. No Southern iron is offered below $18, and two leading producers are asking $19. Northern is firm at $21, and the leading local maker is asking $21.50 to $22, f.o.b. Granite City. Generally the tone is better than in many months. The melt is steadily increasing, and mills and foundries have added substantially to their unfilled orders. One leading foundry interest has put on a night shift, and others have increased their working forces.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices $2.16 freight from Chicago, $3.28 from Florence and Sheffield (rail and water), $5.17 from Birmingham, all rail, and 81c. average switching charge from Granite City:

Northern fdy., sil. 1.75 to 2.25	$22.66 to $23.16
Northern malleable, sil. 1.75 to 2.25	22.66 to 23.16
Basic	22.66 to 23.16
Southern fdy., sil. 1.75 to 2.25 (rail)	23.17 to 24.17
Southern fdy., sil. 1.75 to 2.25 (rail and water)	21.37 to 22.37
Granite City iron, sil. 1.75 to 2.25	22.31 to 22.81

Finished Iron and Steel.—Several sizable structural jobs are pending, and fabricators report an excellent aggregate volume of small orders, a considerable part of which is originating in the South. The open fall has been ideal for building enterprise, and full activities have thus far suffered no interruption. Reinforcing bars are moving in large volume, one local manufacturer reporting an order for 800 tons. The demand for sheets and plates has picked up since the second week of November, and is nearing normal proportions. Warehousemen report a good current business for their entire line, but with most buying for spot shipment. Deferred commitments are disappointing. Hoops and bands continue active, with the movement of binding materials to the cotton belt of record proportions.

For stock out of warehouse we quote: Soft steel bars, 3.35c. per lb.; iron bars, 3.35c.; structural shapes, 3.45c.; tank plates, 3.45c.; No. 10 blue annealed sheets, 4.10c.; No. 28 black sheets, cold-rolled one pass, 5c.; cold-rolled rounds, shafting and screw stock, 4.15c.; structural rivets, 3.90c.; boiler rivets, 4.10c.; tank rivets, ⅞-in. and smaller, 60 per cent off list; machine bolts, 55 and 5 per cent; carriage bolts, 40 and 5 per cent; lag screws, 60 and 5 per cent; hot pressed nuts, squares or hexagons, blank or tapped, $3.50 off list.

Coke.—Aside from a somewhat brisker movement of industrial sizes, the coke market remains featureless. Water gas and bakery interests have been contracting for their first quarter requirements, and there has been fair buying in the lead and zinc belt. Foundry coke is active, but buying is confined almost exclusively to immediate shipment, there being no disposition anywhere to accumulate against winter requirements. Virtually all this business is going to the nearby by-product manufacturers. Continued warm weather has flattened the domestic coke trade, which is described as the slowest in a decade. Prices are steady.

Old Material.—The market for scrap iron and steel continues active and very strong. Several important items in the list were advanced further, including heavy melting steel, which went to a minimum of $16.25, a new high on the movement. The industries have booked some large orders for their products, and though they dislike paying present prices, have been obliged to enter the market. Two of the leading steel works purchased round tonnages, and inquiries are pending for additional quantities. There is great speculative enthusiasm among the dealers, who in many instances are paying more than the mills. Yard stocks are at a low ebb, and nothing to speak of is coming in from the country. Railroad offerings consisted of 7600 tons by the Chicago, Burlington & Quincy and 750 tons by the Cotton Belt. The Government will sell a large tonnage of miscellaneous items at the Rock Island, Ill., arsenal on Nov. 28.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton	
Iron rails	$18.00 to $18.50
Rails for rolling	18.50 to 19.00
Steel rails, less than 3 ft.	19.00 to 19.50
Relaying rails, 60 lb. and under	25.00 to 26.00
Relaying rails, 70 lb. and over	32.50 to 33.50
Cast iron car wheels	18.50 to 19.00
Heavy melting steel	16.25 to 16.75
Heavy shoveling steel	16.00 to 16.50
Frogs, switches and guards cut apart	17.50 to 18.00
Railroad springs	20.00 to 20.50
Heavy axles and tire turnings	13.00 to 13.50
No. 1 locomotive tires	18.00 to 18.50
Per Net Ton	
Steel angle bars	16.00 to 16.50
Steel car axles	19.25 to 19.75
Iron car axles	24.00 to 24.50
Wrought iron bars and transoms	19.00 to 19.50
No. 1 railroad wrought	14.25 to 14.75
No. 2 railroad wrought	14.25 to 14.75
Cast iron borings	10.75 to 11.25
No. 1 busheling	14.00 to 14.50
No. 1 railroad cast	17.00 to 17.50
No. 1 machinery cast	18.50 to 19.00
Railroad malleable	15.00 to 15.50
Machine shop turnings	8.00 to 8.50
Champion bundled sheets	10.00 to 10.50

Buffalo

Furnace Marking Up Asking Prices—Selling Not So Active

Pig Iron.—The market is firmer; additional price advances have been made and furnace interests are making no especial effort to solicit business. Inquiry has been slowed a little by the higher price, but not appreciably. Total iron sought is about 15,000 tons. One local furnace has announced a schedule for the remainder of the year of $23 base; $24 for 2.25 to 2.75 silicon, and $25 for 2.75 to 3.25 silicon. For the first quarter of the year, a base of $22 with dollar differentials are announced by this same interest. The going price on current and first quarter is $22 to $23. Only one furnace is quoting the $22 price on last quarter iron and it is expected that it will stiffen its price. Among the current inquiry are lots of 1100 tons; 2000 tons; 2500 tons; 2250 tons. One company sold during the past week 12,000 tons. The Gould Coupler Co. bought a little less than 2000 tons of basic; a heater concern bought 2500 tons, and a 1000-ton lot of foundry was booked, the latter on a $22 base. The Lackawanna-Bethlehem plant will light a sixth stack this week; Rogers-Brown Iron Co. has placed a fourth stack in blast.

We quote prices f.o.b. gross ton, Buffalo, as follows:

No. 2 plain, sil. 1.75 to 2.25	$22.00 to $23.00
No. 1 foundry, sil. 2.75 to 3.25	23.50 to 24.50
No. 2 foundry, sil. 2.25 to 2.75	22.50 to 23.50
Malleable, sil. up to 2.25	22.00 to 23.00
Basic	22.00 to 23.00
Lake Superior charcoal	29.23

Finished Iron and Steel.—The market shows several signs of improvement. The prices on bars, shapes and plates have been marked up by local mills $2 a ton in each case, and considerable business has been booked at these prices. Bar and structural business in particular shows improvement. Jobbers are beginning to replenish stocks and railroads are buying steel. The alloy market is pretty well established and there is not much tendency to cut. This market is expected to stiffen a little. The demand for semi-finished is better. Sheet bar demand is good and billets fair. Mill operation has jumped to 65 to 70 per cent and more open hearths are on. Fabricators report fair business with a 650-ton job, a warehouse, the feature of the placement. Contract for the steel in the new Shea theater, 1450 tons, is pending, though it is re-

ported a Cleveland concern is low on the general contract.

Steel bars, 3.30c.; iron bars, 3.35c.; reinforcing bars, 3.30c.; structural shapes, 3.40c.; plates, 3.40c.; No. 10 blue sheets, 4.05c.; No. 28 black sheets, 4.75c.; No. 28 galvanized sheets, 5.85c.; bands, 4.05c.; hoops, 4.40c.; cold-finished rounds, 4.20c.; cold-finished shapes, 4.70c.

Old Material.—The mills have made purchases of scrap during the week which aggregate about 20,000 to 25,000 tons of all grades. The price of heavy melting steel has stiffened to $18 to $19 with one mill which requires a very good grade paying the $19 price. The mills have bought sufficient, they say, to take them out of the market for sizable buying until after the first of the year. With the amount of their own scrap they have on hand, and the proportion of pig iron now being used in open-hearth mixtures, the mills feel that they have the market under their control and that they will avoid the higher prices. Some of the dealers who expected steel to go to $21 will probably sustain losses of more or less gravity, as their yards are now overloaded. The specialty commodities are strengthening and even cast scrap, which has been weak, is much firmer. Considerable inquiry has come out during the week for stove plate and it is stronger. Hydraulic compressed and No. 1 busheling buying was a feature of the past week's business and the prices on these have strengthened.

We quote f.o.b. gross ton, Buffalo, as follows:

Heavy melting steel	$18.00 to $19.00
Low phosphorus, 0.04 and under	20.50 to 21.00
No. 1 railroad wrought	15.50 to 16.50
Car wheels	16.50 to 17.50
Machine shop turnings	12.50 to 13.00
Cast iron borings	12.50 to 13.50
No. 1 busheling	17.50 to 18.00
Stove plate	15.50 to 16.50
Grate bars	14.50 to 15.00
Bundled sheets	12.50 to 13.00
Hydraulic compressed	16.50 to 17.00
Railroad malleable	17.50 to 18.00
No. 1 machinery cast	18.00 to 18.50

Boston

About 15,000 Tons of Pig Iron Sold During Past Week—Prices Advanced

BOSTON, Nov. 25.—More pig iron was sold here the past week than in any similar period in months. Sales to Maine, New Hampshire, Vermont, Massachusetts and Rhode Island foundries were approximately 15,000 tons. When purchases by Connecticut melters are added, the total should run around 20,000 tons. Of the iron sold here, Buffalo and western Pennsylvania furnaces will furnish about 85 per cent. Prices on Buffalo iron took a wide range due to orders booked on the newly established price basis and because some foundries were protected on prices before the advance. The wide range on western Pennsylvania prices is due to the spread in furnace quotations and freight rates. For instance, one furnace booked large tonnages at $20 furnace for No. 2 plain and No. 2X and $20.50 for No. 1X, while another took small tonnages at $22 furnace for No. 2 plain, $23 for No. 2X and $23.50 for No. 1X. The spread in freight rates in these two instances amounts to about 20c. Buffalo iron today apparently is $23 furnace base for 1924 delivery and $22 for 1925 first quarter, with dollar differentials. Western Pennsylvania No. 2 plain and No. 2X are still available at $1.80 and $2.80 a ton, respectively, delivered, less than Buffalo. Eastern Pennsylvania iron sold in a small way at $22 furnace base with dollar differentials; New York State at delivered prices slightly under Buffalo; while additional tonnages were booked by Alabama iron sold at 50c. a ton advance over previous prices. Lake charcoal iron, at unchanged prices, also figured in the week's transactions. Sales included about 3000 tons to a Rhode Island melter, 1000 tons to a Vermont foundry, 1500 tons by a central Massachusetts foundry, 1000 tons to a New Hampshire, and a large number of smaller tonnages. Foreign irons have not figured prominently in recent sales. India iron prices are firmer in sympathy with American, and German iron is offered at $23.25 on dock, duty not paid, to iron brokers, which means at least $25.25 on dock, duty paid, resold. On Nov. 15 1001 tons and on the following day 1244 tons of India iron were landed at this port. The last previous arrival of foreign iron was 300 tons of Dutch on Nov. 8.

We quote delivered prices on the basis of the latest reported sales as follows, having added $3.65 freight from eastern Pennsylvania, $4.91 to $5.11 from western Pennsylvania; $4.91 from Buffalo, $5.92 from Virgina and $9.60 from Alabama:

East. Penn., sil. 1.75 to 2.25	$25.15 to $25.65
East. Penn., sil. 2.25 to 2.75	25.65 to 26.65
West Penn., sil. 1.75 to 2.25	25.11 to 26.91
West. Penn., sil. 2.25 to 2.75	25.11 to 27.91
Buffalo, sil. 1.75 to 2.25	26.91 to 27.91
Buffalo, sil. 2.25 to 2.75	27.91 to 28.91
Virginia, sil. 1.75 to 2.25	29.42 to 29.92
Virginia, sil. 2.25 to 2.75	29.92 to 30.42
Alabama, sil. 1.75 to 2.25	27.60 to 28.60
Alabama, sil. 2.25 to 2.75	28.15 to 29.15

Cast Iron Pipe.—No large contracts for cast iron pipe have been placed in this market for more than a month. There is, however, considerable small business from buyers who are filling in supplies for winter use. Foundries have acquired large tonnages in other territories. Because of this fact and because of the advance in pig iron, higher quotations on cast iron pipe are intimated. The market today is reported as firm, as follows: 4 in. and small, Class B pipe, $64.10 a ton delivered common Boston rate points; 6 in. to 16 in., $59.10; 20 in. and larger, $58.10. The usual $5 differential on Class A and gas pipe is demanded. Gas pipe business also is coming in slow. A Rhode Island industrial plant in the market for 6000 to 7000 tons of gas pipe a month ago, so far as can be ascertained, has not covered.

Coke.—Except that specifications against 1924 contracts, partly as a result of slightly larger aggregate iron melt and partly for winter stocking purposes, are running slightly in excess of those last month, there is little new in the foundry coke situation. Some buyers expect higher prices next month because of the firmness of the Connellsville foundry coke market. Both the New England Coal & Coke Co. and the Providence Gas Co. quote by-product coke at $11.50 a ton delivered in New England. Practically all foundries in this territory have covered on first half 1925 coke requirements. There is some talk of the New England Coal & Coke Co. closing its books on first half contracts.

Old Material.—Considerable excitement prevails, due to growing optimism among dealers and brokers. Prices on stock required have further appreciated, and sympathetic advances in inactive materials are noted. While actual purchases against contracts with eastern Pennsylvania and Pittsburgh district consumers amounted to several thousand tons the past week, actual buying is not as active as it might be. The higher prices climb the more some owners of material are inclined to hold off for still higher prices. Forged scrap prices show the greatest net advance for the week, not because of their activity, but because previous quotations were entirely out of line with bundled skeleton, which has advanced $1 a ton. Forged flashings and shafting have gone up about $1, and heavy melting steel, machine shop turnings, mixed borings and turnings, car axles and rails 50c. There is a ready market for chemical borings at a $1 advance. For bundled cotton ties, railroad malleable and wrought iron, there is virtually no market. Machinery cast and stove plate are inactive, but higher in sympathy with pig iron.

The following prices are for gross ton lots delivered consuming points:

No. 1 machinery cast	$19.00 to $20.00
No. 2 machinery cast	17.00 to 18.00
Stove plates	14.50 to 15.00
Railroad malleable	17.50 to 18.00

The following prices are offered per gross ton lots, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel	$14.00 to $14.50
No. 1 railroad wrought	13.50 to 14.00
No. 1 yard wrought	12.50 to 13.00
Wrought pipe (1-in. in. diam., over 2 ft. long)	12.00 to 12.50
Machine shop turnings	10.00 to 10.50
Cast iron borings, chemical	13.00 to 13.50
Cast iron borings, rolling mill	9.50 to 10.00
Blast furnace borings and turnings	9.00 to 9.50
Forged scrap	9.50 to 10.00
Bundled skeleton	10.50 to 11.00
Bundled cotton ties	8.50 to 9.00
Forged flashings	11.00 to 11.50
Shafting	19.00 to 19.50
Street car axles	18.50 to 19.00
Rails for rerolling	14.50 to 15.00
Scrap rails	13.50 to 14.00

Cincinnati

Pig Iron Prices Firm as Buying Gradually Becomes Less Active

CINCINNATI, Nov. 25.—The demand for pig iron tapered off somewhat during the week, buying generally being confined to lots of 100 to 500 tons, with occasional orders for 1000- and 2000-ton lots, all for first quarter. There is a report that a nearby steel company had bought 20,000 tons of basic iron, but confirmation is lacking. Sales were about evenly divided between Northern and Southern grades and prices are very firm with a tendency to further advance. The range in southern Ohio is now $21.50 to $22, base, Ironton, while in Tennessee and Alabama the only furnaces quoting are asking $19 for last and first quarter. Three of the largest producers in Alabama have withdrawn from the market. There is little activity in basic or Bessemer grades and silveries are in only fair demand. Makers of 50 per cent ferrosilicon have opened books for first quarter delivery at $82.50 per ton, delivered.

Based on freight rates of $4.05 from Birmingham and $2.27 from Ironton we quote f.o.b. Cincinnati:

Southern fdy., sil. 1.75 to 2.25 (base)	$23.05
Southern fdy., sil. 2.25 to 2.75	23.55
Southern Ohio silvery, 8 per cent	31.77 to 32.77
Southern Ohio fdy., sil. 1.75 to 2.25	23.77 to 24.27
Southern Ohio, basic	23.27
Southern Ohio, malleable	23.77 to 24.27

Plant Operations.—Iron and steel production is increasing in this district. Sheet mills are operating close to 75 per cent of capacity. Two blast furnaces were blown in last week, one on silvery and one on basic iron. A merchant producer is expected to light up early in December, and it is possible that a furnace company now operating one stack may blow in another before Jan. 1.

Sheets.—Bookings for December shipment have been heavy, consumers apparently wishing to take on as much tonnage as possible before first quarter prices are announced. One mill which recently opened books for first quarter delivery at advances of from $2 to $3 per ton reports that it has booked more than half its capacity. Independent mills generally are going slowly in booking first quarter business, preferring to wait until the American Sheet & Tin Plate Co. announces its prices. There is a growing conviction that the leading interest may not officially name a price on sheets for the first quarter, but that its price on tin plate will be announced shortly. Sheet prices quoted today range from 2.60c. to 2.70c. for blue annealed, 3.50c. to 3.65c. for black and 4.60c. to 4.75c. for galvanized, all f.o.b. Pittsburgh, with automobile body sheets quoted from 4.60c. to 4.75c., Pittsburgh.

Tin Plate.—Inquiry for tin plate for first half is heavy, but as books have not been opened, no business has been placed. It is expected that prices will be named this week, and while there is a possibility of higher prices being named, the trade generally believes that the present price of $5.50 per base box will be maintained.

Structural Activity.—Outside of an inquiry for 6000 tons for an unnamed project in Indianapolis, there is little new inquiry. The Smith Bros. Hardware Co. at Columbus is taking bids Dec. 1 for an addition involving approximately 600 tons. The Union Gas & Electric Co. has awarded 300 tons for an addition to its power plant near Cincinnati to the Fort Pitt Bridge Works. A number of projects have been postponed till next spring.

Reinforcing Bars.—The largest active project involves only 100 tons, but following a favorable vote on bonds, the city of Dayton, Ohio, is now preparing plans for the construction of seven concrete bridges across the Miami River, to cost $7,000,000, and work on which will start next spring. Reinforcing bar prices have stiffened, new billet steel being quoted today at 2c. to 2.10c., Pittsburgh, and hard steel bars at 2c., mill.

Warehouse Business.—Jobbers continue to report improvement in sales, and expect the demand to continue the rest of the year. Prices are firm and unchanged.

Cincinnati jobbers quote: Iron and steel bars, 3.30c.; reinforcing bars, 3.30c.; hoops, 4.35c.; bands, 3.95c.; shapes, 3.40c.; plates, 3.40c.; cold-rolled rounds, 4.05c.; cold-rolled flats, squares and hexagons, 4.55c.; open-hearth spring steel, 4.75c. to 5.75c.; No. 10 blue annealed sheets, 3.90c.; No. 28 black sheets, 4.60c.; No. 28 galvanized sheets, 5.75c.; No. 9 annealed wire, $3.15 per 100 lb.; common wire nails, $3.15 per keg base; cement coated nails, $2.85 per keg.

Finished Materials.—Contracting for first quarter was fairly brisk during the past week, at a range of prices from 2c. to 2.10c. for bars, 2c. to 2.10c. for shapes and 1.90c. to 2c., Pittsburgh, for plates. For immediate delivery most of the mills have been booking at the higher prices, and while it is still possible to secure the lower prices for attractive tonnages, the market is firmer, and the higher prices generally are quoted. The advance of $2 per ton in wire products made by the American Steel & Wire Co. will be generally followed by the independent producers, but there is still some contracting at the old prices. The demand for hoops and bands has considerably improved, with prices ranging from 2.40c. to 2.60c., Pittsburgh. A fair demand for bolts and nuts is reported for December shipment, as buyers are figuring that prices for first quarter contracts, when named, will be higher. Only a fair inquiry is reported for light rails and track accessories, but prices are steady.

Coke.—The demand for foundry and domestic grades of coke is improving slightly. There have been no price changes, although one operator in the Wise County field is offering for immediate acceptance foundry coke at $3.90, ovens. Wise County furnace is quoted at $3.50 to $3.75 ovens. Connellsville coke is quoted at $3.15 to $3.50 for furnace and $4 to 4.50 for foundry. By-product producers will make no change for December foundry coke contracts, $6.50, Connellsville base, having been named.

Old Material.—With the exception of one sale of 1000 tons of mixed scrap, the market was rather quiet, activity generally being confined to carload lots. Prices are stronger in sympathy with iron and steel products and advances of 50c. per ton have been made in dealers' buying prices.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

Per Gross Ton	
Heavy melting steel	$15.00 to $15.50
Scrap rails for melting	14.00 to 14.50
Short rails	17.50 to 18.00
Relaying rails	29.50 to 30.00
Rails for rolling	15.50 to 16.00
Old car wheels	14.00 to 14.50
No. 1 locomotive tires	16.50 to 17.00
Railroad malleable	16.00 to 16.50
Agricultural malleable	14.50 to 15.00
Loose sheet clippings	11.50 to 12.00
Champion bundled sheets	12.50 to 13.00
Per Net Ton	
Cast iron borings	10.50 to 11.50
Machine shop turnings	10.00 to 10.50
No. 1 machinery cast	18.50 to 19.00
No. 1 railroad cast	16.00 to 16.50
Iron axles	21.50 to 22.00
No. 1 railroad wrought	12.00 to 12.50
Pipes and flues	8.50 to 9.00
No. 1 busheling	11.00 to 11.50
Mixed busheling	9.00 to 9.50
Burnt cast	11.00 to 11.50
Stove plate	11.00 to 11.50
Brake shoes	12.50 to 13.00

Birmingham

Buying Continues as Sellers of Pig Iron Mark Up Their Quotations

BIRMINGHAM, ALA., Nov. 25.—The market has been stronger this month than at any time since the World War, and every furnace company desiring to sell on the open market has a chance to book business. One company is out of the market for the time being, having sold as much iron as it believes it can handle for a while, while iron from one of the furnaces in the northwestern part of the State is not easily obtained. The selling began with iron at $18 per ton, No. 2 foundry, and jumped during the past week to $18.50, hesitat-

ing there but a short time, and then going to $19, the level at which some sales are now being made. Prediction is made by more than one that the price will be $20 within another 10 days. The inquiries are in bunches, so to speak, and the probable make of the first three months of the coming year will hardly suffice at present rate of production. The surplus iron is insignificant also when comparison is made with the appregate of sales and the inquiries still coming in. Preparations are being made to increase the make on the turn of the year, if not before. The loss of a furnace at Gadsden, a slip in the furnace bringing about necessity for relining No. 1 furnace of The Alabama Co., is unfortunate at this time. The Sloss-Sheffield Steel & Iron Co. in taking over the properties of The Alabama Co. will consider an early blowing in. Spot sales are still frequent, iron for the remainder of the year being purchased by smaller consumers and immediate delivery being requested. Inquiries have been received for first half of the coming year.

We quote per gross ton, f.o.b. Birmingham district furnace as follows:

No. 2 foundry, 1.75 to 2.25 sil.	$17.50 to $18.50
No. 2 foundry, 2.25 to 2.75 sil.	18.00 to 18.50
Basic	18.50 to 19.00
Charcoal, warm blast	30.00 to 31.00

Steel.—While further improvement is noted in the steel market in this district, wire, nail and other small products prices inclining upward, the improvement is not so active as that with the pig iron market. The Gulf States Steel Co. is operating 50 per cent in its open-hearth plant and well in the finishing department. The Tennessee Coal, Iron & Railroad Co. and American Steel & Wire Co. have been producing at a rate of about 85 and 90 per cent. Fabricators are reporting improved conditions and are buying according to needs only. Steel bars are given at 2.15c. to 2.25c., Birmingham.

Cast Iron Pipe.—Lettings are still being received by the three large-sized pipe makers of this district, and quotations are hardening a little, the 6-in. and over pipe being quoted at $40 and 4-in. and over at $44, with $1 per ton higher in less than car lots. Shipments of pipe into the Northwest and West are active.

Coke.—Further improvement in the coke market is announced by independent producers here. The quotations are firmer, but have not advanced. Prices have been and are still at $4 to $4.50 for furnace coke, $4.50 to $5 for foundry, with some bee-hive coke sold as high as $5.25.

Old Material.—Scrap iron and steel continue to lag despite the fact that pig iron is selling freely and plants which are usually good consumers of old material are operating steadily. Heavy melting steel, stove plate and No. 1 cast show a 50c. advance over the past few weeks. Dealers in old material are hopeful now that immediately after inventory time there will be considerable scrap needed and that advancing iron prices will bring about buying of old material.

We quote per gross ton f.o.b. Birmingham district yards as follows:

Cast iron borings, chemical	$15.00 to $16.00
Heavy melting steel	12.00 to 12.50
Railroad wrought	12.00 to 13.00
Steel axles	17.00 to 18.00
Iron axles	19.00 to 19.50
Steel rails	12.50 to 13.00
No. 1 cast	14.50 to 15.00
Tramcar wheels	15.00 to 16.00
Car wheels	14.00 to 15.00
Stove plate	14.00 to 15.00
Machine shop turnings	6.00 to 7.00
Cast iron borings	7.00 to 8.00
Rails for rolling	15.00 to 16.00

The DuBois Fluorspar Mining Co., Cobden, Ill., recently incorporated with $250,000 capital stock, has taken over the lease on 160 acres of mineral land in Hardin County, Ill., one and three-quarters miles northwest of Rosiclair. The company proposes to mine fluorspar and lead. It has begun sinking shafts and now has several hundred tons of flux and acid spar on the property ready for the market. It is the intention of the management to develop the property so that it will handle about 50 tons a day. A fluorspar and lead vein is said to have been uncovered for more than a mile across the land.

Cleveland

Sales of Pig Iron Amount to 50,000 Tons—Steel Buying Not So Active

CLEVELAND, Nov. 25.—The buying movement of finished steel, principally in steel bars, which started about two weeks ago, has subsided to some extent, but there is still a very good demand, largely from the smaller consumers, as most of the larger buyers had previously placed their contracts. More activity is developing in other finished lines. Some of the mills have covered their trade in first quarter contracts and others are taking orders for specified lots running well into that quarter. Specifications for large tonnages are being placed against these contracts. Although some business was taken during the week at the prices that prevailed before the recent advance, this evidently was mostly business on which quotations have now been withdrawn. The market generally is firm and a very optimistic feeling prevails in the trade. Some of the automobile companies are placing liberal contracts with parts makers for as extended deliveries as they can secure into next year and the parts makers are covering for steel to fill these contracts. However, it is not probable that much of this business is being placed beyond the first quarter because of the inability of parts makers to buy steel for longer deliveries. While wire products have advanced $2 a ton, there is still uncertainty whether this price will apply to wire rods and screw stock.

Although pig iron sales have fallen off after the heavy buying movement, the market is still fairly active and slightly higher in spots.

Jobbers quote steel bars, 3.10c.; plates and structural shapes, 3.20c.; No. 28 black sheets, 4.35c.; No. 28 galvanized sheets, 5.45c.; No. 10 blue annealed sheets, 3.45c. to 3.60c.; cold-rolled rounds, 3.90c.; flats, squares and hexagons, 4.40c.; hoops and bands, 1 in. and wider and 20 gage and heavier, 3.85c.; narrower than 1 in., all gages, 4.35c.; No. 9 annealed wire, $3.15 per 100 lb.; No. 9 galvanized wire, $3.60 per 100 lb.; common wire nails, $3.25 base per 100 lb.

Pig Iron.—The heavy buying movement for the first quarter that has been under way for three weeks is subsiding, but the market was fairly active through the past week, during which Cleveland interests sold approximately 55,000 tons of pig iron. Outside of one round lot of basic iron, sales were mostly all in foundry grades. Most gray iron foundries in this territory are now under cover for the first quarter, but not much malleable iron has been sold for that delivery, the large Central Western malleable plants not having come into the market. There has been no further advance in foundry iron prices except in spots, but the market is firm. One Lake interest has advanced its price 50c. to $21 for foundry and malleable iron, the range in Lake furnace prices being from $20.50 to $21. Some business was taken during the week by Cleveland furnaces for outside shipment at both prices. The usual range in the Valley district is $20 to $20.50, although one producer is on a $22 basis in the Valley and at several other producing centers. For Cleveland delivery, the price is unchanged at $21 at furnace. Owing to the stiffening of the Buffalo market to $22, at least one furnace further west has been able to take business at $21 for shipment to New England or at a better price than it is able to obtain in the Valley district. A Lake furnace today booked a round tonnage of basic iron at a price that figures back higher than $20 Valley furnace. A few days previous, a Valley furnace sold 300 tons of basic at $19.50. The Andrews Steel Co. has not closed for the 20,000 tons of basic it inquired for. The Westinghouse Electric & Mfg. Co. has not made purchases against its recent inquiry for iron for its Cleveland plant and Cleveland furnaces have withdrawn quotations submitted before the advance. Sales of foundry iron during the week include a 4000-ton lot taken by an Ohio jobbing foundry and several 1000-ton lots. Low phosphorous iron is fairly active

and firm. Sales include a 1000-ton lot taken by a Cleveland foundry.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a $3.02 freight rate from Jackson and $6 rate from Birmingham:

Basic, Valley furnace	$19.50 to $20.00
N'th'n No. 2 fdy., sil. 1.75 to 2.25	21.50
Southern fdry., sil. 1.75 to 2.25	24.01 to 25.01
Malleable	21.50
Ohio silvery, 8 per cent	32.52
Stand. low phos., Valley furnace	28.00 to 29.50

Iron Ore.—Consumption of Lake Superior ore during October was 3,497,792 tons or an increase of 570,690 tons over September, according to the monthly report compiled by the Lake Superior Iron Ore Association. On Oct. 31 there were 155 furnaces consuming Lake ore in blast, an increase of 6 for the month. Ore in furnace yards and on docks Nov. 1 amounted to 41,536,089 tons as compared with 38,997,921 tons on Oct. 1 and with 41,042,399 tons on Nov. 1 last year. The November movement is expected to amount to about 2,000,000 tons, making total shipments by water for the season about 42,500,000 tons. Very few cargoes will be shipped this week and the last cargo of ore will leave the Upper Lakes the latter part of the week.

Bolts, Nuts and Rivets.—Specifications for bolts and nuts on contracts show a further increase and the present demand is satisfactory. Prices are firm. Rivet specifications, which have been very slow, showed a decided gain during the week. Some inquiries are coming out for bolt and nut and rivet contracts for the first quarter, but makers have not opened their books. Large rivets are firm, but there are price irregularities on small rivets.

Steel Bars, Plates and Structural Material.—Steel bars are firm at the recent advance to 2.10c., Pittsburgh, or 2.29c., Cleveland. However, structural material is not holding to the same advance, as quotations of 2.05c. are appearing. The plate market seems to be holding well to 1.90c., but this price has not been tested on round lots. Following the recent advance, the Bethlehem Steel Corporation has marked up plates $1 more a ton or to 1.95c.

Semi-Finished Steel.—A Cleveland producer has opened its books for semi-finished steel for the first quarter, naming its current price of $37.50, Cleveland, for sheet bars, at which it has booked round lots. A few sales were also made at this price for December shipment. The same seller during the week took orders for billets and slabs for the first quarter, subject to trade paper prices, total sales mostly in sheet bars aggregating 30,000 to 40,000 tons. Youngstown mills quote sheet bars at $37 and billets at $35.50 for December shipment.

Sheets.—The new sheet prices of 3.60c. for black, 2.70c. for blue annealed and 4.75c. for galvanized placed in effect today by the American Sheet & Tin Plate Co. are the same prices that had previously been announced by some of the independent mills. Other mills that have been waiting for action by the Steel Corporation announce that they will adopt the same prices. There is still irregularity on sheets for early shipment, with some mills quoting black at 3.40c. and blue annealed at 2.60c. The price advance is bringing out good specifications on contracts placed recently at lower prices.

Hot and Cold-Rolled Steel.—After mills recently announced the advance on bands to 2.40c. for widths up to 10 in., that was little more than a nominal quotation, but the market has stiffened to the 2.40c. price, at which good orders are being booked. Wide hot-rolled strip is still irregular, with mills trying to get 2.25c. as compared with recent prices of 2.10c. or lower. Mills are also trying to get away from net prices that have been prevailing. Hoops are firmer, with 2.50c. the minimum. Cold-rolled strip is unchanged at 4.15c.

Reinforcing Bars.—The advance on billet steel bars has resulted in a stiffening of rail steel bars, which are now quoted at a minimum of 1.90c. The Bourne-Fuller Co. has taken 700 tons for foundation work for the Union Terminals Co., Cleveland. The Rivet Grip Steel Co. has taken 175 tons of fabricating steel joists for the Inlet Terrace Hotel, Daytonia, Fla.

Coke.—The foundry coke market is rather slow with prices unchanged at $4.25 to $5.50 for standard Connellsville coke. Some of the higher priced brands are available for the first quarter at present prices.

Wire Products.—The American Steel & Wire Co., effective Nov. 19, made an advance of $2 per ton on nails and other wire products. Consumers were given the opportunity to cover at the old prices and a heavy tonnage was booked before the advance.

Old Material.—There was considerable buying during the week by consumers in the Cleveland and Valley districts. Scrap prices continue their upward movement, having advanced from 25c. to 75c. a ton in the past week. The market is firm and present prices are not bringing out much material. A local mill paid $18.50 to $19 for heavy melting steel and sales of machine shop turnings and mixed borings and turnings are reported for delivery to Cleveland consumers at $16.50. Dealers are offering $20.50 for heavy melting steel and $17.50 to $17.75 for compressed sheet for Warren delivery and $19.50 for Youngstown and Lowellville delivery.

We quote dealers' prices f.o.b. Cleveland per gross ton:

Heavy melting steel	$18.25 to $18.75
Rails for rolling	18.25 to 18.50
Rails under 3 ft.	20.00 to 20.50
Low phosphorus melting	20.50 to 21.00
Cast iron borings	16.00 to 16.25
Machine shop turnings	15.50 to 15.75
Mixed borings and short turnings	16.00 to 16.50
Compressed sheet steel	15.50 to 16.00
Railroad wrought	16.00 to 16.50
Railroad malleable	19.25 to 19.50
Light bundled sheet stampings	13.75 to 14.00
Steel axle turnings	16.25 to 16.50
No. 1 cast	19.50 to 20.00
No. 1 busheling	15.25 to 16.00
Drop forge flashings	13.75 to 14.00
Railroad grate bars	15.50 to 16.00
Stove plate	15.50 to 16.00
Pipes and flues	14.00 to 14.25

Philadelphia

Higher First Quarter Prices Expected—Prices Advanced on Spikes and Basing Points Established

PHILADELPHIA, Nov. 25.—Sellers still show a pronounced disinclination to consider first quarter business at present prices. While this is particularly noticeable in pig iron, it is also a characteristic of the finished materials market. While No. 2 plain foundry is quoted at $22.50 base on current business and rather generally at $23 base by those furnaces at all interested in booking first quarter tonnages, at least one furnace, reported to be seeking a backlog, has offered foundry iron on a $22 base in the past week. Semi-finished material is slightly firmer and $37, Pittsburgh, on rerolling billets seems to be the minimum at present on any tonnage for shipment after the first of the year. Finished products are firmer at the higher prices of a week ago, although 1.80c. per lb. is still obtainable on plates for this year's delivery. Mills show little interest in first quarter commitments and are not inclined to quote on inquiries for delivery extending much beyond January. The recent inquiry of the Pennsylvania Railroad for plates, January and February delivery, brought out concessions from the 2c. base, Pittsburgh, that makers feel is the minimum on first quarter, but quotations ranged up to 2.05c. per lb.

Railroad spikes have been advanced about 20c. per 100 lb. and the f.o.b. mill base on spikes has given way to quotations f.o.b. certain basing points, determined by the location of the nearest maker of spikes. By this arrangement the more remote mills become keen competitors with the local maker in various districts. The railroads have been active buyers. The rail inquiry of the Pennsylvania Railroad is expected to appear early next year. The scrap market continues extremely active and $20 on heavy melting steel was reached last week on sales to certain eastern Pennsylvania consumers.

Pig Iron.—Many of the smaller consumers of foundry iron are providing a fairly large volume of inquiry, principally for medium-sized and small lots. A cast iron pipe maker is reported to be in the market for from 7000 to 8000 tons for first quarter. Buyers evince considerable interest in first quarter tonnages, but sellers are not inclined to quote advanced delivery at present prices. While No. 2 plain is fairly well established at $22.50, one furnace seeking a backlog is reported still on a $22 base. For first quarter, $23 seems to be the minimum quotation. The recent purchase by an eastern Pennsylvania consumer of about 30,000 tons of basic is understood to have been at better than $21. A transaction of the past week, involving a round tonnage, was at $21.50, delivered, after which the seller went to a $22 delivered price. The Bethlehem Steel Co. is preparing to blow in a furnace at Coatesville, which will give a total of 13 in blast. The Replogle Steel Co., the Witherbee-Sherman Co., and the Thomas Iron Co. are reported contemplating the blowing in of furnaces. While the 50c. differential is adhered to by most sellers in eastern Pennsylvania, in one case a furnace is quoting $1 between all three grades and at least two other sellers are charging $1 between No. 2X and No. 1X, but adhering to the 50c. between No. 2 and No. 2X. It is reported that some of the allotments of Indian iron to dealers have been concluded.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76c. to $1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	$23.26 to $24.13
East. Pa. No. 2X, 2.25 to 2.75 sil.	23.76 to 24.63
East. Pa. No. 1X	24.26 to 25.13
Virginia No. 2 plain, 1.75 to 2.25 sil.	28.17 to 28.67
Virginia No. 2X, 2.25 to 2.75 sil.	28.67 to 29.17
Basic delivered eastern Pa.	21.50 to 22.00
Gray forge	22.00 to 22.50
Malleable	23.00 to 23.50
Standard low phos. (f.o.b. furnace)	24.50 to 25.00
Copper bearing low phos. (f.o.b. furnace)	24.50 to 25.00

Ferroalloys.—Consumers apparently satisfied immediate needs in ferromanganese at the former price of $100, so that but little business in small lots is reported at the current quotation of $105 seaboard for British or $105 furnace for the domestic product.

Semi-Finished Steel.—A slight improvement is noted and consumers evince some interest in first quarter tonnage. Prices have stiffened largely as a result of the advances in pig iron and scrap. While $36.50, Pittsburgh, is still possible for current business, first quarter quotations are evidently firm at $37 for rerolling billets, with forging at $42, Pittsburgh.

Finished Material.—There is a general tone of firmness in plates, shapes and bars. Steel bars are firm at 2c. for this year's delivery with 2.10c., Pittsburgh, the general quotation for first quarter. Sellers, however, are not inclined to quote for delivery extending much beyond January. Fabricators are covering themselves for future projects, as far as possible at present prices. While 1.95c., Pittsburgh, might still be obtained on shapes for delivery this month or next, first quarter prices are reported firm at 2c., with some companies quoting 2.10c., base. The plate market is firm with the minimum still 1.80c. per lb., Pittsburgh, for this year delivery, and in some instances 1.90c. per lb. On first quarter business makers, in anticipation of further advances, are not inclined to shade 2c. base and in most cases are accepting tonnages only for January or early February delivery. The recent plate inquiry of the Pennsylvania Railroad for close to 2000 tons, early first quarter delivery, brought out slight concessions from the 2c., Pittsburgh base, but quotations ranged up to 2.05c., Pittsburgh.

Bolts, Nuts and Spikes.—An increase of as much as 10 per cent is still mentioned as possible on bolts and nuts, but it is pointed out in some quarters that inasmuch as the present price is consistent with the schedule on bars, further advance will probably depend upon continued upward movement in bars. Spikes have been advanced about 20c. per 100 lb., 9/16 and ⅝ being quoted at $3.05, delivered Philadelphia, and ⅜, 7/16 and ½, at $3.35, delivered Philadelphia in carload lots. Concurrently the f.o.b. mill base has been changed to quotations on a basis of competition with the local district maker, the new basing points including Pittsburgh, Chicago, New York, Buffalo, Lebanon and Scranton, Pa., Richmond, Va., and Philadelphia.

Warehouse Business.—A slight lessening in demand was noted last week. Some inclination to shade bars and shapes is reported, believed to be caused by the appearance of foreign material, offered at lower prices and shipped from stock.

Old Material.—Sufficient business has been transacted in the past week to establish prices on the higher level being paid by brokers to fulfill contracts. On recent sales of No. 1 heavy melting steel, $20 has been paid by eastern Pennsylvania consumers. No. 1 heavy melting steel at $19 to $20, delivered eastern Pennsylvania, represents a fair range of the present market. Borings and turnings and forge fire are about the only grades not reported active and rapidly advancing in price.

We quote for delivery at consuming points in this district as follows:

No. 1 heavy melting steel	$19.00 to $20.00
Scrap rails	19.00 to 19.50
Steel rails for rolling	20.00
No. 1 low phos., heavy 0.04 and under	22.50 to 23.50
Couplers and knuckles	21.50 to 22.50
Rolled steel wheels	21.50 to 22.50
Cast-iron car wheels	19.00 to 19.50
No. 1 railroad wrought	19.00 to 20.00
No. 1 yard wrought	18.00 to 19.00
No. 1 forge fire	15.50 to 16.00
Bundled sheets (for steel works)	15.50 to 16.00
Mixed borings and turnings (for blast furnace use)	13.00 to 13.50
Machine shop turnings (for steel works use)	15.50 to 16.00
Machine shop turnings (for rolling mill use)	16.00 to 16.50
Heavy axle turnings (or equivalent)	16.00 to 16.50
Cast borings (for steel works and rolling mills)	15.50 to 16.00
Cast borings (for chemical plants)	18.00 to 19.00
No. 1 cast	18.50 to 19.00
Heavy breakable cast (for steel plants)	17.00 to 17.50
Railroad grate bars	16.00 to 16.50
Stove plate (for steel plant use)	15.50 to 16.00
Wrought iron and soft steel pipes and tubes (new specifications)	17.50 to 18.00
Shafting	25.00 to 25.50
Steel axles	25.00 to 25.50

Canadian Scrap Market

TORONTO, ONT.—While some improvement has appeared in the Canadian iron and steel scrap market, the increased demand has not been general, but has been confined to a few commodities. The stronger demand for pig iron, together with the higher price now prevailing, is expected to have some reflection on the scrap situation, and dealers in both Toronto and Montreal are predicting a stronger demand for first quarter and advancing buying and selling prices. The fact that some of the larger consumers of scrap, such as the Algoma Steel Corporation, Sault Ste. Marie, Ont., which has resumed operations at its 18-in. merchant mill, and the British Empire Steel Corporation, Sydney, N. S., which is now operating its blooming mill and open-hearth furnaces, are again in operation, if only in a small way, leaves the impression that better times are before the trade, and as a consesquence dealers are taking a more optimistic view of future business. While no general change is reported in Toronto dealers' buying prices, quotations are showing a firmer tendency. Montreal dealers have advanced buying prices on some commodities and are now offering $11 per gross ton for heavy melting steel; $7 per gross ton for wrought pipe and $14 per net ton for stove plate. Prevailing dealers' buying prices are as follows:

	Toronto	Montreal
Gross Tons		
Steel turnings	$9.00	$8.00
Machine shop turnings	9.00	7.00
Wrought pipe	6.00	8.00
No. 1 wrought scrap	12.00	12.00
Heavy melting steel	11.00	11.00
Steel axles	16.00	19.00
Axles, wrought iron	19.00	20.00
Net Tons		
Standard car wheels	16.00	17.00
Malleable scrap	14.00	15.00
Stove plate	14.00	14.00
No. 1 machinery cast	18.00	18.00

JUDGE GARY THANKFUL

Expresses Hope That Business Will Continue to Improve Conservatively

Judge Elbert H. Gary, chairman United States Steel Corporation, sounded a conservative note as to price advances when, in response to inquiries from representatives of the press Tuesday afternoon, he said:

"The results of the Presidential election have been what we had hoped and expected they would be. The demand for iron and steel products is large and increasing. It promises to be fully up to and perhaps in excess of the manufacturing capacity. The prices have been too low. It is hoped that they will soon be high enough to allow all of the producers some profit. As the published figures show, many have been operating at a loss. I am very glad that employers during the last six months have not reduced their wage rates, although they would have been justified in so doing. I am hoping that the markets of everything that is sold will not advance too rapidly nor to figures that are unreasonably high. It will be better for all business lines and for the country if we can have a steady, progressive and reasonable volume of business at fair rates.

"We should be and are thankful for the conditions which exist in this country, and for the kind of governmental administration that we have in Washington. For the last six months it has required some courage and a clear vision to look forward with confidence and satisfaction. Now that we are entering upon a realization of our hopes we shall increase our efforts to justify the blessings bestowed upon us."

Pittsburgh Iron and Steel Market

(*Concluded from page* 1435)

Old Material—Sales of heavy melting steel have been made in the past week at $20 and $20.50 at Monessen and Midland, Pa., and at $21 at Vandergrift, Pa., and that sets the quotable range for this week on that grade, although there is some doubt that a buyer now seeking a round lot of this grade would have much success in getting it below $21. Dealers are protecting their yard stocks by paying as much and in some cases more than they are getting on current sales and the market also is strengthened by the fact that there is a gradual increase in steel works operations and the consumption of scrap, to say nothing of the strength of outside markets, which means a smaller drawing area for Pittsburgh district mills. The market maintains much of its recent strength in machine shop turnings, because they are not plentiful and because dealers are short of them. Rails for rerolling are stronger, but as yet there has not been much activity in the foundry grades of material and prices are not yet showing much real strength. Westinghouse Electric & Mfg. Co. is reported to have obtained $17.60 per gross ton for compressed sheets for December shipments, f.o.b. East Pittsburgh, $16.25 for machine shop turnings, $16 for borings and $19.65 for heavy steel scrap.

We quote for delivery to consumer's mill in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

Per Gross Ton	
Heavy melting steel	$20.00 to $21.00
No. 1 cast, cupola size	18.50 to 18.75
Rails for rolling, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va., and Franklin, Pa.	20.00 to 21.00
Compressed sheet steel	18.50
Bundled sheets, sides and ends	17.50
Railroad knuckles and couplers	21.50 to 22.00
Railroad coil and leaf springs	21.50 to 22.00
Low phosphorus blooms and billet ends	24.00 to 25.00
Low phosphorus plate and other material	23.00 to 24.00
Railroad malleable	18.00 to 18.50
Steel car axles	21.50 to 22.00
Cast iron wheels	19.50 to 20.00
Rolled steel wheels	21.50 to 22.00
Machine shop turnings	16.75 to 17.25
Sheet bar crops	21.50 to 22.00
Heavy steel axle turnings	17.00 to 17.50
Short shoveling turnings	15.00
Heavy breakable cast	17.00 to 17.50
Stove plate	16.00 to 16.50
Cast iron borings	15.50 to 16.00
No. 1 railroad wrought	17.00 to 18.00
No. 2 railroad wrought	20.00 to 21.00

Chicago Iron and Steel Market

(*Concluded from page* 1337)

pressed by what has happened to other commodities and are showing an increased disposition to stock ahead. A new development of favorable significance is the increased demand for pipe in agricultural sections, like Iowa, better buying of oil country goods, and encouraging orders from implement manufacturers.

Cold-Rolled Strip.—An advance of $3 a ton by the leading interest at Cleveland brings the local price up to 4.45c., Chicago.

Hot-Rolled Strip.—Inquiry from the automotive industry is increasing, but buyers have not yet given up the idea that the mills might still accept tonnage at the concessions current some weeks ago. There appears to be general adherence, however, to 2.50c., Chicago, on strips 10 in. and wider and 2.60c. on narrower sizes.

Warehouse Prices.—In line with current advances in mill prices local jobbers have raised wire and wire nails $2 a ton and cement coated nails $3 a ton. For the new prices see paragraph on wire products.

Old Material.—A steel works has bought a few thousand tons of heavy melting at $17.75 per gross ton delivered, which is the highest consumer price paid thus far, comparing with $18, the top figure paid for railroad material by dealers. There have also been fair-sized consumer purchases of iron mill grades and malleable scrap at advanced prices, but, generally speaking, buying by users has slackened and trading among brokers is much less active. Such price changes as have taken place during the week have been upward, but it is evident that there is apprehension of a possible reaction. While it is generally agreed that scrap consumption is increasing as industry grows more active, it is also realized that prices sometimes become top heavy if they advance too rapidly. Railroad offerings include the Burlington, 7500 tons; the Chicago & Alton, 900 tons, and the Mobile & Ohio, 1700 tons.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton	
Iron rails	$18.50 to $19.00
Cast iron car wheels	19.00 to 19.50
Relaying rails, 56 and 60 lb.	26.00 to 27.00
Relaying rails, 65 lb. and heavier	27.00 to 32.00
Forged steel car wheels	21.00 to 21.50
Railroad tires, charging box size	21.00 to 21.50
Railroad leaf springs, cut apart	21.00 to 21.50
Rails for rolling	18.50 to 19.00
Steel rails, less than 3 ft.	19.50 to 20.00
Heavy melting steel	17.50 to 18.00
Frogs, switches and guards cut apart	17.75 to 18.25
Shoveling steel	17.25 to 17.75
Drop forge flashings	12.50 to 13.00
Hydraulic compressed sheets	14.50 to 15.00
Axle turnings	15.50 to 16.00
Steel angle bars	18.50 to 19.00
Steel knuckles and couplers	21.00 to 21.50
Coil springs	21.50 to 22.00
Low phos. punchings	19.00 to 19.50
Machine shop turnings	11.00 to 11.50
Cast borings	13.00 to 13.50
Short shoveling turnings	13.00 to 13.50
Railroad malleable	19.50 to 20.00
Agricultural malleable	19.00 to 19.50
Per Net Ton	
Iron angle and splice bars	18.00 to 18.50
Iron arch bars and transoms	20.00 to 20.50
Iron car axles	26.00 to 26.50
Steel car axles	19.50 to 20.00
No. 1 busheling	14.50 to 15.00
No. 2 busheling	9.50 to 10.00
Pipes and flues	12.00 to 12.50
No. 1 railroad wrought	16.00 to 16.50
No. 2 railroad wrought	15.50 to 16.00
No. 1 machinery cast	18.00 to 18.50
No. 1 railroad cast	17.00 to 17.50
No. 1 agricultural cast	17.00 to 17.50
Locomotive tires, smooth	17.50 to 18.00
Stove plate	15.50 to 16.00
Grate bars	15.50 to 16.00
Brake shoes	15.50 to 16.00

Shipments of steel furniture in October were reported by the Department of Commerce at $1,472,902, a sharp advance over the September figure of $1,291,867 and a moderate increase over the figure of $1,365,600 recorded in October, 1923. The current figure is the largest since May and is larger than any in 1923, except for the three spring months.

Prices of Finished Iron and Steel Products (Carload Lots)

Tank Plates

F.o.b. Pittsburgh mills, base, per lb.....1.80c. to 2.00c.
F.o.b. Chicago, base, per lb.....2.10c.

Structural Shapes

F.o.b. Pittsburgh mills, base, per lb.....2.00c. to 2.10c.
F.o.b. Chicago, base, per lb.....2.10c.

Iron and Steel Bars

Soft steel bars f.o.b. P'gh mills, base, per lb....2.00c. to 2.10c.
Soft steel bars f.o.b. Chicago, base, per lb.....2.00c. to 2.10c.
Reinforcing steel bars f.o.b. P'gh mills, base, per lb. 2.00c. to 2.10c.
Rail steel bars f.o.b. Chicago district mills, base, per lb..1.90c.
Common iron bars delivered New York, base, per lb....2.34c.
Common iron bars f.o.b. Chicago, base, per lb.....2c.
Refined iron bars f.o.b. P'gh mills, base, per lb..2.90c. to 3.00c.
Common iron bars delivered Philadelphia, base, per lb..2.32c.

Hot-Rolled Flats

(Pittsburgh)

Hoops, base, per lb.....2.50c.
Bands, base, per lb.....2.40c. to 2.50c.
Strips, 10 in. and wider, base, per lb.....2.25c.
Strips, less than 10 in. wide to 3 in.....2.40c.
Strips, 3 in. wide and less, base, per lb.....2.50c.

Cold-Finished Steel

Screw stock and shafting, f.o.b. P'gh mills, base, per lb..2.70c.
Screw stock and shafting f.o.b. Chicago mills, base, per lb.2.70c.
Screw stock, Worcester mills, base, per lb.....2.90c.
Screw stock, base, per lb., Cleveland.....2.75c.
Shafting, ground, f.o.b. mill, base, per lb.....3.10c.
Strips, f.o.b. P'gh mills, base, per lb.....4.00c. to 4.15c.
Strips, f.o.b. Cleveland mills, base, per lb.....4.15c.
Strips, f.o.b. Chicago mills, base, per lb.....4.45c.
Strips, f.o.b. Worcester mills, base, per lb.....4.30c.

Wire Products

(To jobbers in car lots f.o.b. Pittsburgh and Cleveland)

Nails, base, per keg	$2.75 to $2.85
Bright plain wire, base, No. 9 gage, per 100 lb.	2.50 to 2.60
Annealed fence wire, base, per 100 lb.	2.65 to 2.75
Galvanized wire No. 9, base, per 100 lb.	3.10 to 3.20
Galvanized barbed, base, per 100 lb.	3.45 to 3.55
Galvanized staples, base, per keg	3.45 to 3.55
Painted barbed wire, base, per 100 lb.	3.20 to 3.30
Polished staples, base, per keg	3.20 to 3.30
Cement coated nails, base, per count keg	2.15 to 2.25
Woven wire fence, base, per net ton to retailers	65.00 to 67.00

Chicago district mill prices are $2 per ton above the foregoing and Chicago delivered prices are $3 per ton above the prices f.o.b. Cleveland and Pittsburgh. Birmingham mill prices $3 a ton higher; Worcester, Mass., mills $3 a ton higher on products of that plant, and Duluth, Minn., mills $2 a ton higher; Anderson, Ind., $1 higher.

Sheets

Blue Annealed

(base) per lb.

Nos. 9 and 10, f.o.b. Pittsburgh dist. mills.....2.60c. to 2.70c.
Nos. 9 and 10 (base) per lb., f.o.b. Chicago dist. mills..2.80c.

Box Annealed, One Pass Cold Rolled

No. 28 (base) per lb., f.o.b. Pittsburgh dist. mills.3.40c. to 3.60c.
No. 28 (base) per lb., f.o.b. Chicago dist. mill.....3.70c.

Galvanized

No. 28 (base) per lb., f.o.b. Pittsburgh dist. mills.4.50c. to 4.70c.
No. 28 (base) per lb., f.o.b. Chicago dist. mills.....4.80c.

Tin-Mill Black Plate

No. 28 (base) per lb., f.o.b. Pittsburgh dist. mills.3.40c. to 3.60c.
No. 28 (base) per lb., f.o.b. Chicago dist. mills.....3.70c.

Automobile Body Sheets

No. 22 (base) per lb., f.o.b. mill.....4.60c. to 4.75c.

Long Ternes

No. 28 (base) 8-lb. coating, per lb., f.o.b. mill.....4.90c.

Tin Plate

Standard cokes, per base box f.o.b. Pittsburgh district Mills $5.50
Standard cokes, per base box f.o.b. Chicago district mills 5.60
Standard cokes, per base box f.o.b. Elwood, Ind..... 5.60

Terne Plate

(F.o.b. Morgantown or Pittsburgh)
(Per Package, 20 x 28 in.)

8-lb coating, 100 lb. base $11.20	20-lb. coating I. C....$15.50
8-lb. coating I. C.... 11.50	25-lb. coating I. C.... 17.00
15-lb. coating I. C.... 14.35	30-lb. coating I. C.... 18.35
	40-lb. coating I. C.... 20.35

Rivets

Large, f.o.b. P'gh and Cleveland mill, base, per 100 lb..$2.60
Large, f.o.b. Chicago mills, base, per 100 lb..... 2.75
Small, f.o.b. P'gh and Cleveland mills 70, 10 and 5 per cent off list
Small, f.o.b. Chicago mills.....70, 10 and 5 to 70 and 10 off list

Rails and Track Equipment

(F.o.b. mill)

Rails, standard, per gross ton	$43.00
Rails, light, billet, base, per lb	1.80c. to 1.90c.
Rails, light rail steel, base, per lb	1.65c. to 1.75c.
Spikes, ½ in. and larger, base, per 100 lb	$2.80 to $2.95
Spikes, ⅜ in. and smaller, base, per 100 lb	3.10 to 3.20
Spikes, boat and barge, base, per 100 lb	3.25
Track bolts, all sizes, base, per 100 lb	3.75 to 4.00
Track bolts, heat treated, base, per 100 lb	4.25 to 4.50
Tie plates, per 100 lb	2.35 to 2.50
Angle bars, base, per 100 lb	2.75

Welded Pipe

(F.o.b. Pittsburgh district mills)

Butt Weld

Steel Inches	Black	Galv.	Iron Inches	Black	Galv.
⅛	45	19½	¼ to ⅜	+11	+39
¼ to ⅜	51	25½	½	22	2
½	56	42½	¾	28	11
¾	60	48½	1 to 1½	30	13
1 to 3	62	50½			

Lap Weld

2	55	43½	2	23	7
2½ to 6	59	47½	2½	26	11
7 and 8	56	43½	3 to 6	28	13
9 and 10	54	41½	7 to 12	26	11
11 and 12	53	40½			

Butt Weld, extra strong, plain ends

⅛	41	24½	2 to 3	61	50½
¼ to ⅜	47	30½	¼ to ⅜	+11	+54
½	53	42½	½	21	7
¾	58	47½	¾	28	12
1 to 1½	60	49½	1 to 1½	30	14

Lap Weld, extra strong, plain ends

2	53	42	2	23	9
2½ to 4	57	46½	2½ to 4	29	15
4½ to 6	56	45½	4½ to 6	28	14
7 to 8	52	39½	7 to 8	21	7
9 and 10	45	32½	9 to 12	16	2
11 and 12	44	31½			

To the large jobbing trade the above discounts are increased (on black) by one point, with supplementary discount of 5 per cent and (on galvanized) by 1½ points, with supplementary discount of 5 per cent.

NOTE—The above discounts on steel pipe also apply at Lorain and Youngstown, Ohio, and Wheeling, W. Va. Chicago district mills have a base 2 points less. Chicago delivered base 2½ points less.

Boiler Tubes

(F.o.b. Pittsburgh)

Lap Welded Steel		Charcoal Iron	
2 to 2¼ in.	27	1½ in.	+18
2½ to 2¾ in.	37	1¾ to 1⅞ in.	+ 8
3 in.	40	2 to 2¼ in.	— 2
3¼ to 3¾ in.	42½	2½ to 3 in.	— 7
4 to 13 in.	46	3¼ to 4½ in.	— 9

Beyond the above discounts, 5 fives extra are given on lap welded steel tubes and 2 tens on charcoal iron tubes.

Standard Commercial Seamless Boiler Tubes
Cold Drawn

1 in.	55-58	3 and 3¼ in.	36-39
1¼ and 1½ in.	47-50	3½ and 3¾ in.	37-40
1¾ in.	31-34	4 in.	41-44
2 and 2¼ in.	22-25	4½ in. and 5 in.	33-37
2 and 2¾ in.	32-35		

Hot Rolled

3 and 3¼ in.	38-41	4-in.	43-46
3½ in. and 3¾ in.	39-42		

Less carloads, 4 points less. Add $8 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tube list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing

Carbon under 0.30 base.....85 to 87 per cent off list
Carbon 0.30 to 0.40, base.....83 to 85 per cent off list

Plus usual differentials and extras for cutting. Warehouse discounts range higher.

Seamless Locomotive and Superheater Tubes

	Cents per Ft.		Cents per Ft.
2-in. O.D. 12 gage	15	2¼-in. O.D. 10 gage	20
2-in. O.D. 11 gage	16	3-in. O.D. 7 gage	35
2-in. O.D. 10 gage	17	1½-in. O.D. 9 gage	15
2¼-in. O.D. 12 gage	17	5⅝-in. O.D. 9 gage	55
2¼-in. O.D. 11 gage	18	5½-in. O.D. 9 gage	57

Prices of Iron and Steel Products and Raw Materials

Ores

Lake Superior Ores, Delivered Lower Lake Ports

Old range Bessemer, 55 per cent iron	$5.65
Old range non-Bessemer, 51½ per cent iron	4.90
Mesabi Bessemer, 55 per cent iron	5.40
Mesabi non-Bessemer, 51½ per cent iron	4.75

Foreign Ore, per Unit, c.i.f. Philadelphia or Baltimore

Iron ore, low phos., copper free, 55 to 58 per cent iron in dry Spanish or Algerian	9.00c. to 9.50c.
Iron ore, Swedish, average 66 per cent iron	9.50c.
Manganese ore, washed, 51 per cent manganese, from the Caucasus, nominal	42c.
Manganese ore, ordinary, 48 per cent manganese from the Caucasus	40c.
Manganese ore, Brazilian or Indian, nominal	42c.
Tungsten ore, high grade, per unit, in 60 per cent concentrates	$3.50
Chrome ore, basic, 48 per cent Cr_2O_3, crude, per ton, c.i.f., Atlantic seaboard	18.50 to 24.00
Molybdenum ore, 85 per cent concentrates, per lb. of MoS_2, New York	80c.

Coke and Coal

(Per Net Ton)

Furnace coke, f.o.b. Connellsville prompt	$3.15 to $3.25
Foundry coke, f.o.b. Connellsville prompt	4.25 to 4.75
Mine run steam coal, f.o.b. W. Pa. mines	1.50 to 2.10
Mine run coking coal, f.o.b. W. Pa. mines	1.60 to 1.85
Mine run gas coal, f.o.b. W. Pa. mines	2.00 to 2.25
Steam slack, f.o.b. W. Pa. mines	1.05 to 1.15
Gas slack, f.o.b. W. Pa. mines	1.15 to 1.30

Ferroalloys

Ferromanganese, domestic, 80 per cent, furnace, or seaboard, per ton	$105.00
Ferromanganese, foreign, 80 per cent, f.o.b. Atlantic port, duty paid	105.00
Ferrosilicon, 50 per cent, delivered	70.00 to 75.00
Ferrosilicon, 75 per cent	140.00
Ferrotungsten, per lb. contained metal	87c. to 90c.
Ferrochromium, 4 to 6 per cent carbon, 60 to 70 per cent Cr. per lb. contained Cr. delivered	10.75c.
Ferrochromium, 6 to 7 per cent carbon, 60 to 70 per cent Cr., per lb.	10.50c.
Ferrovanadium, per lb. contained vanadium	$3.50 to $4.00
Ferrocarbontitanium, 15 to 18 per cent, per net ton	200.00

Spiegeleisen, Bessemer Ferrosilicon and Silvery Iron

(Per gross ton furnace unless otherwise stated.)

Spiegeleisen, domestic, 19 to 21 per cent, $31.00 to $33.00
Spiegeleisen, domestic, 16 to 19 per cent, 30.00 to 32.00
Ferrosilicon, Bessemer, 10 per cent, $39.50; 11 per cent, $42; 12 per cent, $44.50; 14 to 16 per cent (electric furnace), $36.00.

Silvery iron, 5 per cent, $27.00; 6 per cent, $28.00; 7 per cent, $29.00; 8 per cent, $29.00 to $30.00; 9 per cent, $32.50; 10 per cent, $34.50; 11 per cent, $37.00; 12 per cent, $39.50.

Fluxes and Refractories

Fluorspar, 80 per cent and over calcium fluoride, not over 5 per cent silica, per net ton, f.o.b. Illinois and Kentucky mines	$17.50
Fluorspar, 85 per cent and over calcium fluoride, not over 5 per cent silica, per net ton f.o.b. Illinois and Kentucky mines	18.50
Fluorspar, foreign, 85 per cent calcium fluoride, not over 5 per cent silica, c.i.f. Philadelphia, duty paid, per gross ton	19.75

Per 1000 f.o.b. works:

Fire Clay:	High Duty	Moderate Duty
Pennsylvania	$40.00 to $43.00	$36.00 to $40.00
Maryland	45.00 to 47.00	40.00 to 42.00
Ohio	40.00 to 43.00	37.00 to 39.00
Kentucky	42.00 to 43.00	37.00 to 39.00
Illinois	——	37.00 to 42.00
Missouri	42.00 to 45.00	35.00 to 40.00
Illinois	42.00 to 45.00	——
Ground fire clay, per net ton		6.00 to 7.00
Silica Brick:		
Pennsylvania		33.00
Chicago		43.00 to 44.00
Birmingham		50.00
Ground silica clay, per net ton		7.50 to 8.00
Magnesite Brick:		
Standard size, per net ton (f.o.b. Baltimore and Chester, Pa.)		65.00
Grain magnesite, per net ton (f.o.b. Baltimore and Chester, Pa.)		40.00
Chrome Brick:		
Standard size, per net ton		45.00

Bolts and Nuts

(F.o.b. Chicago and Pittsburgh)

Machine bolts, small rolled threads..60 and 20 per cent off list
Machine bolts, all sizes, cut threads..60 and 10 per cent off list
Carriage bolts, smaller and shorter, rolled threads, 60 and 10 per cent off list
Carriage bolts, cut threads, all sizes.....60 per cent off list
Eagle carriage bolts.....65, 10 and 10 per cent off list
Lag bolts .....70 per cent off list
Plow bolts, Nos. 1, 2 and 3 heads..50, 10 and 5 per cent off list
Other style heads.....20 per cent extra
Machine bolts, c.p.c. and t. nuts, ⅜ x 4 in. 50, 10 and 5 per cent off list
Larger and longer sizes.....50, 10 and 5 per cent off list
Hot-pressed nuts, blank or tapped, square.....4.50c. off list
Hot-pressed nuts, blank or tapped, hexagons..5 per cent off list
C.p.c. and t. square or hex. nuts, blank or tapped..4.50c. off list
Eagle carriage bolts.....65, 10 and 10 per cent off list
Plow bolts .....50, 10 and 5 per cent off list
Semi-finished hex. nuts:
1 in. and smaller, U. S. S....80, 10, 10 and 5 per cent off list
⅞ in. and larger, U. S. S....75, 10, 10 and 5 per cent off list
Small sizes, S. A. E.....80, 10, 10 and 5 per cent off list
S. A. E., ⅝ in. and larger.....80, 10 and 5 per cent off list
Stove bolts in packages.....80, 10 and 5 per cent off list
Stove bolts in bulk.....80, 10, 5 and 2½ per cent off list
Tire bolts .....60 and 10 per cent off list
Bolt ends with hot pressed nuts.....60 and 10 per cent off list
Bolt ends with cold pressed nuts....50 and 10 per cent off list
Washers .....6.00c. to 6.25c. off list
Lock washers .....80 per cent off list

Foregoing prices are quoted f.o.b. Cleveland by Cleveland manufacturers for Cleveland delivery.

Semi-Finished Castellated and Slotted Nuts

(F.o.b. Chicago and Pittsburgh)

(To jobbers and consumers in large quantities)

	Per 1000 S. A. E.	Per 1000 U. S. S.		Per 1000 S. A. E.	Per 1000 U. S. S.
¼-in.	$4.25	$4.25	⅞-in.	$13.25	$13.50
5/16-in.	4.90	4.90	1-in.	16.25	16.50
⅜-in.	5.90	6.25	1⅛-in.	22.50	23.00
7/16-in.	7.50	8.50	1¼-in.	34.00	34.00
½-in.	9.75	10.00	1⅜-in.	52.00	55.00

Larger sizes—Prices on application.

Cap and Set Screws

(F.o.b. shipping point.)

Milled hex. cap screws.....85 and 10 per cent off list
Milled standard set screws, case hardened 85 and 10 per cent off list
Milled headless set screws, cut thread, 85 and 10 per cent off list
Upset hex. head cap screws, U. S. S. thread, 85, 10, 10 and 5 per cent off list
Upset hex. head cap screws, S. A. E. thread, 85, 10, 10 and 5 per cent off list
Milled studs.....80 and 10 per cent off list

Semi-Finished Steel, f.o.b. Pittsburgh or Youngstown, per gross ton

Rolling billets, 4-in. and over	$35.50
Forging billets, ordinary carbons	40.50
Sheet bars, Bessemer	$37.00 to $37.50
Sheet bars, open hearth	$37.00 to $37.50
Slabs	$35.50
*Wire rods, common soft, base, No. 5 to ⅜-in.	45.00 to 48.00
Wire rods, common soft, coarser than ⅜-in.	$3.50 over base
Wire rods, screw stock	$5.00 per ton over base
Wire rods, carbon 0.20 to 0.40	3.00 per ton over base
Wire rods, carbon 0.41 to 0.55	5.00 per ton over base
Wire rods, carbon 0.56 to 0.75	7.50 per ton over base
Wire rods, carbon over 0.75	10.00 per ton over base
Wire rods, acid	15.00 per ton over base
Skelp, grooved, per lb.	1.90c. to 2c.
Skelp, sheared, per lb.	1.90c. to 2c.
Skelp, universal, per lb.	1.90c. to 2c.

*Chicago mill base is $50.00.

Alloy Steel

(F.o.b. Pittsburgh or mill)

S. A. E. Series Numbers	Bars 100 lb.
2100*(1½% Nickel, 10 to 20 per cent Carbon)	$3.00
2300 (3½% Nickel)	4.75
2500 (5% Nickel)	$6.25 to 6.50
3100 (Nickel Chromium)	3.65
3200 (Nickel Chromium)	5.50
3300 (Nickel Chromium)	7.50 to 7.75
3400 (Nickel Chromium)	6.50 to 6.75
5100 (Chromium Steel)	3.50
5200*(Chromium Steel)	7.50 to 8.00
6100 (Chromium Vandium bars)	4.25
6100 (Chromium Vanadium spring steel)	4.25
9250 (Silicon Manganese spring steel)	3.50
Carbon Vanadium (0.45 to 0.55 Carbon, 0.15 Vanadium)	4c.
Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chromium, 0.15 Vanadium)	4.50
Chromium Molybdenum bars (0.80—1.10 Chromium, 0.25—0.40 Molybdenum)	4.25
Chromium Molybdenum bars (0.50—0.70 Chromium, 0.15—0.25 Molybdenum)	3.75
Chromium Molybdenum spring steel (1—1.25 Chromium, 0.30—0.50 Molybdenum)	4.75 to 5.00

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for cold drawn bars is 1c. per lb. higher. For billets 4 x 4 to 10 x 10-in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4-in. down to and including 2½-in. squares, the price is $5 a gross ton above the 4 x 4 billet price.

*Not S.A.E. specifications, but numbered by manufacturers to conform to S.A.E. system.

Freight Rates on Pig Iron from Chicago to Various Consuming Points

Continuing the publication of freight rates on iron and steel products, THE IRON AGE *this week presents the rates on pig iron from Chicago to various melting points to which iron is shipped*

Freight Rates on Pig Iron in Car Lots Per Gross Ton

From Chicago to—					
Rockford, Ill.	$1.39	Des Moines, Iowa	4.24	Minneapolis, Minn.	3.04
Freeport, Ill.	1.39	Dubuque, Iowa	1.76	St. Paul, Minn.	3.04
Rock Island, Ill.	1.76	Cedar Rapids, Iowa	3.04	Duluth, Minn.	3.77
Moline, Ill.	1.76	Waterloo, Iowa	3.04	Benton Harbor, Mich.	1.89
Davenport, Iowa	1.76	Ottumwa, Iowa	2.80	Muskegon, Mich.	3.02
Kewanee, Ill.	1.64	Marshalltown, Iowa	4.01	Grand Rapids, Mich.	3.02
Peoria, Ill.	1.76	Milwaukee, Wis.	1.00	Kalamazoo, Mich.	2.65
Aurora, Ill.	.88	Racine, Wis.	1.00	Jackson, Mich.	3.02
Elgin, Ill.	.88	Kenosha, Wis.	1.00	Lansing, Mich.	3.15
Joliet, Ill.	.63	Waukesha, Wis.	1.00	Battle Creek, Mich.	3.02
Chicago Heights, Ill.	.60	Janesville, Wis.	1.39	La Porte, Ind.	1.76
Geneva, Ill.	.88	Beloit, Wis.	1.39	Terre Haute, Ind.	2.37
Carpentersville, Ill.	1.01	Madison, Wis.	1.64	Indianapolis, Ind.	2.65
Danville, Ill.	1.64	Sheboygan, Wis.	1.94	Mishawaka, Ind.	1.89
Belvidere, Ill.	1.39	Appleton, Wis.	1.94	Michigan City, Ind.	1.39
Galesburg, Ill.	1.76	Fond du Lac, Wis.	1.94	South Bend, Ind.	1.89
Quincy, Ill.	1.76	Green Bay, Wis.	1.94	Kokomo, Ind.	2.65
Batavia, Ill.	.88	La Crosse, Wis.	2.31	St. Louis, Mo.	2.16
		Winona, Minn.	2.31	Omaha, Neb.	4.97

Plans of New Companies

K. F. Dailey, formerly with the Cleveland Machine & Mfg. Co., and later with the Broden & Dailey Construction Co., Cleveland, has become the active head of a new company, the Dailey Machine Construction Co., which has purchased the business of the Broden & Dailey company. The new company will continue the design and manufacture of cold rolling and wire and nail mill equipment and will build special machinery. A well equipped machine shop and foundry will afford the means for carrying on the construction work.

The Production Machine Tool & Parts Co., 416 Broome Street, New York, recently incorporated with $50,000 capital stock to continue the business previously established at 74 Grand Street, has secured a portion of the Fairbanks Co. Building. Mr. Lohn, who heads the business, says that the company will carry a complete stock of used machine tools and parts, including turret lathes, grinding machines, drill presses, boring and slotting machines, collets and other parts.

The Rexhouse Mfg. Co., Poughkeepsie, N. Y., has been incorporated with $50,000 capital stock to manufacture machinery and equipment. Its chief line will consist of bottle capping and corking machinery, but the company also builds special machinery, dies and tools, and is equipped to make parts on a production basis, such as automatic screw machine products, small stampings and machining castings. Allan C. Irish is treasurer.

The Algonquin Electric Co., Poughkeepsie, N. Y., incorporated with $200,000 capital stock to manufacture electric equipment, is a reorganization of the Algonquin Electric Mfg. Corporation. It is in full production at present on transformers for radio sets. It also builds an ignition system and high tension coils. Samples are being made of a fly-wheel type magneto which will be put on the market soon. Present plant will be used, though it may be necessary to enlarge it in the near future. The new officers are W. E. Steinback, president; Andrew Kennedy, vice-president, and W. L. Berlinghof, secretary.

The Kilborn & Bishop Co., New Haven, Conn., has been organized as a consolidation of the Kilborn & Bishop Co., maker of drop forgings, New Haven, and the Bay State Forge Co., Springfield, Mass. George A. Kilborn is president, Holloway Kilborn, vice-president, and J. H. G. Williams, general manager.

The General Engineering & Mfg. Co., 1519-29 South Tenth Street, St. Louis, has been incorporated with $150,000 capital stock to manufacture machinery and parts and to operate as consulting engineer, designer and builder. This is the outgrowth of a business previously organized under South Dakota laws. In about six months the company will be ready to produce. It has plant and equipment. J. Schreiber is president; J. H. Schreiber, vice-president, and Curt. W. V. Kaeufler, secretary-treasurer.

Industrial News Notes

The American Metallurgical Corporation, Boston, has recently received orders for the installation of the following electric heat-treating furnaces: One lead pot furnace for the Pratt & Whitney Co., Hartford, Conn.; one nickel-silver annealing furnace for the Hookless Fastener Co., Meadville, Pa.; one electric central oil heating system for the tempering of hack saws and band saws for the American Saw & Mfg. Co., Springfield, Mass.; one heat-treating furnace for Clayton Mfg. Co., Bristol, Conn.; one heat-treating furnace for DeLaval Separator Co., Poughkeepsie, N. Y., and one 20-kw. electric pot furnace for the Cushman Chuck Co., Hartford, Conn.

The Ferro Enameling Co., 4150 East Fifty-sixth Street, Cleveland, has completed the erection of a new fire-proof warehouse which has a capacity of over 1000 bbl. of enamel.

The Foote Brothers Gear & Machine Co., 215 North Curtis Street, Chicago is erecting a new addition to its plant. The new building will be used for shipping and for raw material storage.

The Dean Brothers Pump Works, 323 West Tenth Street, Indianapolis, has acquired the plant and equipment of the Hill Pump Works of the Midwest Engine Corporation at Anderson on a bid of $180,000, which has been approved by Judge Mahlon E. Bash of Probate Court, where the affairs of the company have been in receivership for several months. The Anderson plant was recently sold to Huntlie Gordon, representing Chicago interests, for $215,000, but the deal was not consummated and a new sale was ordered by the court when some difficulties arose in regard to financing the deal. The Dean company plans to continue the manufacture of pumps at the Anderson plant. Charles Jewett and the Union Trust Co. of Indianapolis are receivers for the Midwest Engine Corporation.

The By-Products Coke Corporation, South Chicago, has placed the order for all of the piping for a boiler, boiler house, steam and feed water lines and the exhausts with B. Floersheim & Co., Farmers Bank building, Pittsburgh.

Directors of the Continental Can Co. have authorized the issuance of additional common stock at $54 per share, the proceeds to be used to increase working capital and to provide for the growth and development of the company's business. This offering will involve approximately 67,000 shares.

NON-FERROUS METALS

The Week's Prices

Cents per Pound for Early Delivery

	Copper, New York		Straits Tin (Spot)	Lead		Zinc	
Nov.	Lake	Electrolytic*	New York	New York	St. Louis	New York	St. Louis
19.....	14.00	13.75	54.75	9.00	8.60	7.25	6.90
20.....	13.87½	13.62½	54.25	9.00	8.60	7.15	6.80
21.....	13.87½	13.50	54.50	9.00	8.60	7.15	6.80
22.....	13.87½	13.50	....	9.00	8.60	7.15	6.80
24.....	13.87½	13.62½	54.35	9.00	8.60	7.17½	6.82½
25.....	14.00	13.75	54.25	9.00	8.60	7.20	6.85

*Refinery quotation; delivered price ¼c. higher.

New York

NEW YORK, Nov. 25.

Demand for all the metals is fairly good, but prices have fluctuated with sterling exchange. Copper, after easing, is again firmer. Consumer buying of tin has been heavy with the market steady. Conditions in the lead market are practically unchanged. Zinc prices, after falling, have again turned upward.

Copper.—Fluctuations in sterling exchange and lower prices in London for copper have been the main factors in the market here. Toward the close of last week these combined influences, together with some metal from second hands, forced quotations downward until some sales were made at 13.75c., delivered, for electrolytic copper. These sales were largely for December delivery and were not participated in by the large producers, who continued to ask higher prices. Conditions this week have changed so that quotations are back to the levels of a week ago, with practically nothing obtainable at less than 14c., delivered, particularly for first quarter positions. Buying is by no means heavy and the market is generally described as quiet but firmer. Lake copper is quoted at 14c., delivered.

Tin.—Buying of Straits tin has been quite active. The largest buying was on Thursday, Nov. 20, and today. Early in the day on Nov. 20 dealers were active buyers and up to noon at least 400 tons changed hands. In the afternoon of the same day consumers were the chief buyers, bringing the total sales for the day to between 600 and 700 tons. On the two days previous to Nov. 20 consumers also bought considerable tin and it is expected that when order books for tin plate are opened for the first half more buying will develop. Some observers, usually regarded as keen, have expected a sharp dip downward in the market but, as consumers are still buying considerable tin, it is pointed out that sellers have nothing to gain by lowering prices. Friday, Saturday and yesterday there was little activity, but today consumers bought the greater part of 400 to 500 tons, due partly to the fact that London prices declined about £2 per ton today. In that market spot standard was quoted today at £255 5s., future standard at £258 5s. and spot Straits at £257 10s. The Singapore price yesterday was £261 10s. Spot Straits tin today is quoted at 54.25c., New York.

Lead.—A fair volume of business is being done by all sellers at widely varying prices in most cases. The leading interest continues to maintain its contract price at 8.65c., New York, and the average price in the outside market is 9c., New York. At East St. Louis transactions are made as low as 8.40c. and as high as 8.80c.

Zinc.—Prime Western zinc declined during the week to 6.80c., St. Louis, but has again turned strong with quotations today at 6.85c., St. Louis, or 7.20c., New York. Prices have been under the influence of sterling exchange and the London market and both foreign and domestic demand here has by no means been heavy. Conditions have improved in the last two or three days, which accounts for the stronger market.

Nickel.—Wholesale lots of shot and ingot nickel are quoted unchanged at 29c. to 30c. per lb., with electrolytic nickel quoted at 33c.

Antimony.—The market is easier and Chinese metal in wholesale lots is lower at 14.50c. per lb., duty paid, New York.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is quoted at 27c. to 28c., duty paid, delivered.

Old Metals.—Foreign demand continues with prices firm. Dealers' selling prices are as follows in cents per lb.:

Copper, heavy and crucible	13.25
Copper, heavy and wire	12.25
Copper, light and bottoms	11.00
Heavy machine composition	10.50
Brass, heavy	9.00
Brass, light	7.50
No. 1 red brass or composition turnings	9.00
No. 1 yellow rod brass turnings	9.00
Lead, heavy	8.25
Lead, tea	7.00
Zinc	4.25
Cast aluminum	17.50
Sheet aluminum	17.50

Chicago

Nov. 25.—In the non-ferrous market the recent advance apparently was overdone and a reaction has set in, carrying down the prices of copper, tin, lead and zinc, antimony alone holding its own. Old metal prices remain unchanged. We quote, in carload lots: Lake copper, 14.25c.; tin, 55.50c.; lead, 8.90c.; spelter, 6.90c., in less than carload lots. On old metals we quote copper wire, crucible shapes and copper clips, 11.25c.; copper bottoms, 9.75c.; red brass, 8.75c.; yellow brass, 7.50c.; lead pipe, 7.75c.; zinc, 4.25c.; pewter, No. 1, 26c.; tin foil, 32c.; block tin, 43c.; all buying prices for less than carload lots.

Scrap Dealers Trying to Unload

YOUNGSTOWN, Nov. 25.—The steel scrap market in this territory shows little variation, with dealers attempting to unload in other districts average high-priced stocks purchased in anticipation of heavy buying by Valley melters following the election. It develops that one of the leading melters in this territory contracted for upward of 100,000 tons of scrap immediately preceding the election. Another principal melter is well fortified with stocks, and is indisposed to enter into new obligations at the current market, which ranges from $19 to $19.50 for heavy melting, with the usual $2 differential for hydraulically compressed sheets. Rather than contract for heavy melting at today's market, one of the leading buying interests of the Valley states it will increase the iron content in its open-hearth mix. This company is well supplied with ample stocks of both cold iron and scrap.

Ontario's Bounty on Ore

G. Howard Ferguson, Premier of Ontario, stated in an address delivered before the Associated Boards of Trade in Toronto that the Ontario Government would pay the full bounty of 1 cent per unit of 100 lb. on iron ore produced in this province over a period of 10 years. This announcement was not altogether unexpected by those having in mind unofficial assurances given several months ago that such action would be taken if the Dominion Government failed to cooperate on an equal basis with the Province of Ontario.

Detroit Scrap Is Firmer

DETROIT, Nov. 25.—The market on old material has shown firmer tendencies during the past week, the only advances, however, being registered on turnings and hydraulic compressed. Several sales of short turnings showed a top price of $13.25 and long turnings sold as high as $13, with hydraulic compressed selling at $14. One of the largest producers is offering approximately 3000 tons of miscellaneous scrap for December delivery on a competitive basis.

PERSONAL

Dr. Robert S. Williams, professor of metallography and analytical chemistry, Massachusetts Institute of Technology, was scheduled to address the Providence section of the American Society of Civil Engineers and the structural section of the Providence Engineering Society on Tuesday evening, Nov. 25, on "Metallography and Its Use to the Engineer."

Raymond C. Broach, formerly of the general sales department of the Heine Boiler Co. in St. Louis, has been appointed manager for the Southeastern district.

A. A. Westcott has resumed his duties with the Cyclops Steel Co., Titusville, Pa., manufacturer of crucible tool steels, as representative in New York State, excluding the metropolitan district.

T. R. Talbot, who has been with the Republic Iron & Steel Co. about 14 years, has tendered his resignation as manager of the St. Louis district. Before going to St. Louis, Mr. Talbot was with the company's Pacific Coast branch for about seven years. Previously he was with the sales force of the National Tube Co. After a vacation, Mr. Talbot expects to resume sales work, but has not announced his plans.

E. A. Kelley has been elected secretary-treasurer of the Splitdorf Electrical Co., Newark, N. J. He has been connected with the company for several years.

Edwin B. Jackson has resigned as president and general manager of the Locomobile Co. of America, Inc., Bridgeport, Conn. He was formerly vice-president of the Willys-Overland Co., Toledo, Ohio. George B. Daniels has been elected to succeed Mr. Jackson.

S. Romayne Somers, has resigned as secretary-treasurer of the Westcott Valve Mfg. Co., Seneca Falls, N. Y., effective Dec. 1. He will move to California to enter another business.

R. E. Anderson has left the Winchester Repeating Arms Co., New Haven, Conn., to accept a position with R. Hoe & Co., Inc., New York.

John N. Derschug, president, Syracuse Washing Machine Co., Syracuse, N. Y., and Walter H. Lippincott, banker and member of Bioren & Co., Philadelphia, have been elected to the directorate of the recently reorganized L. C. Smith & Brothers Typewriter Co., Syracuse. Wilbert L. Smith was appointed chairman of the board.

Robert A. Kiefer has been appointed general sales manager with the Wall Pump & Compressor Co., Quincy, Ill., manufacturer of air equipment, pumps and compressors for the automotive and oil field trades.

H. R. Patterson, general superintendent at the Scott Street plant, American Steel & Wire Co., Joliet, Ill., has been appointed general superintendent of the Rockdale works, near Joliet, to succeed L. E. Booth, recently deceased. J. W. Berscheid of Waukegan has been appointed to succeed Mr. Patterson as general superintendent of the Scott Street plant.

Charles F. Ryan has been added to the sales force of the Ashland By-Product Coke Co. and will divide his time between the offices at Cleveland and Cincinnati. Mr. Ryan was formerly with the sales department of Eaton, Rhodes & Co.

Director H. Foster Bain of the Bureau of Mines, Department of the Interior, together with E. W. Swanson, administrative assistant, and Clyde E. Williams, superintendent of the Bureau's northwestern experimental station at Seattle, Wash., sailed on the American Legion on Nov. 22 for Buenos Aires, with a view to determining the feasibility of establishing an iron and steel industry in Argentina. They will be on a leave of absence, and their investigation in Argentina, which will require four or five months, is being made at the invitation of the Argentine Government. It will cover ore, coal, oil and power resources.

Prof. Albert Sauveur, of the department of metallurgy at Harvard University, will sail soon for South America to attend the Pan-American Scientific Congress.

Howard H. Tremble has joined the Moore Dry Dock Co. in San Francisco, in charge of the steel plate construction division.

A. B. Cooper has been appointed by the Central Steel Co., Massillon, Ohio, its Philadelphia district sales manager with offices in the Widener Building. Mr. Cooper has been identified with the steel industry for 17 years in operating and sales work. He was formerly identified with the Tacony Steel Co. and Penn Seaboard Steel Corporation.

Paul J. Nutting has been promoted to vice-president of the Surface Combustion Co., New York, in charge of production.

T. E. Beddoe, at one time connected with the Pittsburgh and Chicago offices of the Cutler-Hammer Mfg. Co., Milwaukee, has been added to the company's industrial sales engineering force of the eastern district. He is located in the Philadelphia office. Paul Darlington, for the past four years in the industrial controller engineering department at the Milwaukee factory, has joined the New York staff.

F. W. Glauser, formerly associated with the Mid-Continent Equipment & Machinery Co., St. Louis, has been engaged by the Hyman-Michaels Co., Chicago. He will be located in St. Louis, where he will assume management of the equipment department for the southern territory.

Tom Moore, 811 Royster Building, Norfolk, Va., has been appointed railroad sales agent in the southeastern district for the American Bolt Corporation, New York. He will conduct sales activities in the railroad and industrial field. He was formerly general purchasing agent of the Virginian Railway Co.

Ralph Flanders, manager of the Jones & Lamson Machine Co., Springfield, Vt., will deliver a lecture on machine tools at the Third National Exposition of Power and Mechanical Engineering to be held at Grand Central Palace, New York, Dec. 4.

Society of Industrial Engineers Elects Officers

At the annual meeting of the Society of Industrial Engineers at Chicago, Nov. 18, the following officers were elected: president, W. G. Sheehan, Detroit, president, Crystal Corporation; treasurer, Edward T. Miller, Chicago, executive secretary, United Typothetæ of America; executive secretary, George C. Dent, Chicago, 608 South Dearborn Street; vice-president in charge of research, Prof. Charles B. Gordy, Ann Arbor, Mich., University of Michigan; vice-president in charge of promotion, Eugene A. Rummler, Chicago, Rummler & Rummler; vice-president in charge of education, Prof. Walter F. Rittman, Pittsburgh, Carnegie Institute of Technology; two directors to fill vacancies, Louis B. Door, Buffalo, Dold Packing Co., Buffalo, and Prof. George H. Shepard, La Fayette, Ind., Purdue University.

The 1925 national convention will be held at Cleveland, May 6, 7 and 8 at the Hotel Winton.

Increase in Commercial Steel Castings

Bookings of commercial steel castings in October are reported by the Department of Commerce at 66,697 net tons, or 66.2 per cent of capacity, compared with 62,509 tons in September and with 39,651 tons in October of last year. The current figure is the highest since last April. It includes 31,130 tons of railroad specialties or 79.6 per cent of capacity and 35,567 tons of miscellaneous castings or 57.7 per cent of capacity.

Production of beehive coke recovered promptly in the week ended Nov. 15. Estimates place the total output at 152,000 net tons, the highest mark reached since the latter part of May.

OBITUARY

D. J. WILLIAMS, organizer and one of the heads of the Cheney Hammer Co., Little Falls, N. Y., died on Nov. 13, at the Buffalo General Hospital, Buffalo. He was also vice-president of the Gilbert Knitting Co., Little Falls.

FRANK B. NIMICK, a pioneer in the steel industry of Pittsburgh, died at his home in that city Nov. 21, after a lingering illness. Mr. Nimick retired from active participation in the steel industry in 1905. He was born in Pittsburgh 74 years ago, and spent the major portion of his life there. He was educated in the schools of Pittsburgh and later attended the Western Pennsylvania University, now the University of Pittsburgh. He became identified with the Singer Nimick Steel Co. in 1865 and was active in its affairs until its absorption by the Crucible Steel Co. of America early in the present century.

E. J. JOB, president Ashland Sheet Mill Co., Ashland, Ky., died suddenly while on an automobile trip, at Portsmouth, Ohio, Nov. 17. He was 50 years of age and a native of Niles, Ohio.

RUDOLF G. SOMMERFIELD, aged 56 years, president Sommerfield Machine & Mfg. Co., Pittsburgh, maker of electrical winding machines, died at his home in that city on Nov. 21. He was born in Germany but moved to America when 16 years old, living for a short time in New York and later going to Pittsburgh. He started as a machinist with the old Western Electric Co. and later became affiliated with the Westinghouse Electric & Mfg. Co., with which he was connected until 30 years ago, when he resigned to form the company which bears his name.

THOMAS W. SHERIFFS, secretary-treasurer Sheriffs Mfg. Co., Milwaukee, a pioneer concern manufacturing propeller wheels for Great Lakes vessels, died Nov. 17. He was born in Milwaukee in 1852 and became associated in the business with his father as a youth.

WILLIAM HUTCHINSON, general superintendent of mills of the Bethlehem Steel Co. plant at Lebanon, Pa., died Oct. 22, at his home in Lebanon. He was born in 1842, in Maesteg, Wales, and learned roll-turning in the mills of that town. In 1867 he came to this country, being engaged by the Burdan Iron Co., Troy, N. Y., to take charge of the roll-turning department. In 1888 he became superintendent of J. H. Sternbergh & Son, and at the formation of the American Iron & Steel Mfg. Co., in 1899, he went to Lebanon as general superintendent of mills. When the Bethlehem Steel Co. acquired that interest, he continued in charge until his death. He leaves two sons, Lucius J. Hutchinson, superintendent Reading Mills, Bethlehem Steel Co., and Ralph R. Hutchinson, roll designer, Bethlehem Steel Co. mills, Lebanon.

Automobile Production in October

Figures from 205 automobile manufacturers covered by the Department of Commerce show October production of 257,900 passenger cars and 31,433 trucks, compared with 260,171 passenger cars and 30,805 trucks in September. For the 10 months of the year the production of passenger cars has been 2,813,805 and of trucks, 306,724. The reduction below the first 10 months of 1923 in passenger cars was 8½ per cent, the 1923 figure having been 3,076,605. The 10-month production in 1924, however, was far ahead of the entire 12 months of 1922, when the total was 2,339,840. Similarly, for trucks, the 10-month figure in 1924 is only 4.3 per cent below the 320,587 produced in 10 months in 1923. At the same time it is far ahead of the entire 12 months' production of 1922, when the total was 246,678 trucks. The proportion of trucks to passenger cars has remained about constant, the ratio being between 9 and 10 cars to 1 truck in each of the past three years.

Subsidiary of Baldwins, Ltd., of England, Incorporated in Montreal

Baldwins, Montreal, Ltd., Montreal, Que., has been incorporated with a capital stock of $50,000 by Herbert G. Boyle, Charles L. Buchanan, Gerald A. Coughlan and others as provisional directors. The new company will be operated as a subsidiary of Baldwins, Ltd., of England. Baldwins, Montreal, Ltd., will take over part of the building of McClary's Mfg. Co. at Montreal, which will be equipped for the manufacture of galvanized sheets for the Canadian trade. It is not the intention of the company to produce galvanized sheets from bars to the finished products at present, but only to carry on the galvanizing process. It is expected, however, that a more extensive plant will be established later when the entire manufacturing process will be carried out there. Sir Charles Wright, managing director of the parent company, is now in Montreal in connection with the new enterprise.

Explosion in a California Foundry

SAN FRANCISCO, Nov. 22.—(*By air mail.*)—A dynamite explosion in one of the gray iron foundries of the Joshua Hendy Iron Works, Sunnyside, Cal., on Nov. 21, resulted in injuries to six men and property damage estimated at more than $7,500. The explosion was alleged to have been caused by labor agitators opposed to the "American Plan," or open shop, that was adopted by the company two years ago. The entire plant, which has been the scene of labor troubles for nearly two years, was threatened with fire before the flames, caused by the explosion, were controlled.

At the time the explosion occurred officials of the Hendy concern and representatives of the sheriff's office of Santa Clara County were conferring in the plant office on methods to combat labor agitators who had been fomenting discontent in and around the plant. The bomb which caused the explosion is believed to have been secreted with scrap iron which was being smelted in one of the four cupolas.

Inland Steel Co. Power Stations at Indiana Harbor Suddenly Stopped

The entire Indiana Harbor, Ind., works of the Inland Steel Co. was forced to shut down Nov. 13 when all of its three power stations suddenly stopped. The management has not yet been able to discover the reason for the sudden interruption in operations. Later in the same day an extension to a gas main leading from the Inland coke ovens to the Indiana Natural Gas tank in the vicinity blew up at the booster connection, resulting in considerable loss. It is estimated that this damage, together with the loss in production resulting from the shutdown, amounted to over $1,000,000. Full operation was resumed Friday morning, Nov. 14.

Better Employment in Steel Mills

WASHINGTON, Nov. 25—Reflecting a gain of 3 per cent, 241,033 employees were engaged in 213 plants in the iron and steel industry in September, as compared with 233,957 in August, according to the Department of Labor. The gain in the iron and steel industry was consistent with the general movement in industry, employment increasing throughout manufacturing concerns by 2.1 per cent in September, and definitely confirming the upward trend reported in August. In foundry and machine shop products, employment in September showed a decline of 1.2 per cent, the total on the pay roll in 726 plants being 169,123, as against 171,241 in August.

"Tangent Modulus and the Strength of Steel Columns in Tests" is the title of the technologic paper No. 263 of the Bureau of Standards, by O. H. Basquin. The pamphlet contains 61 pages, with statistical data, and is fully illustrated with charts.

FABRICATED STEEL BUSINESS

Bookings Exceed 85,000 Tons—Largest This Year —New Inquiries Over 42,000 Tons

The week's awards for fabricated structural steel totaled over 85,000 tons, the largest reported for any similar period this year. Of that amount 35,000 tons was for railroad bridge and shop work, the Santa Fe heading the list with an award of 25,000 tons. Fresh inquiries call for over 42,000 tons. Among these is the revival of a 17,000-ton hotel in Chicago.

Millinery Center, Thirty-eighth Street and Seventh Avenue, 22-story loft building, 4000 tons, to Hay Foundry & Iron Works.

McCutcheon Building, Forty-ninth Street and Seventh Avenue, New York, 2300 tons, to Hay Foundry & Iron Works.

Runkel chocolate factory, New York, 700 tons, to Hedden Iron Construction Co.

Thirty-eight East Eighty-fifth Street Corporation, apartment house, 750 tons, to A. E. Norton Co.

Hudson Valley Coke & Products Co., Troy, N. Y., building, 500 tons, to McClintic-Marshall Co.

Public Ledger Co., Philadelphia, office building, 4000 tons, to American Bridge Co.

Seamans Church Institute, New York, addition to building, 1600 tons, to American Bridge Co.

Garage, Seventy-first and Exterior Streets, New York, 500 tons, to George A. Just Co.

Two loft buildings for the Bricken Construction Co., Broadway and Thirty-fifth Street and Eighth Avenue and Thirty-seventh Street, New York, 4500 tons and 2500 tons, to McClintic-Marshall Co.

Apartment house, Riverside Drive and Seventy-sixth Street, New York, 600 tons, to Hinkle Iron Co.

School, Greenwich, Conn., 400 tons, to Porcupine Co.

Apartment house, Central Park South, New York, 700 tons, to Paterson Bridge Co.

Apartment house, Ninety-second Street and Fifth Avenue, New York, 1200 tons, to Easton Structural Steel Co.

Bedell Building, Portland, Ore., 1000 tons, to Poole & McGonigle, local fabricators.

Perkins Co., Holyoke, Mass., textile plant, 300 tons, to G. Haarmann Co.

Erie Railroad Co., railroad bridge at Paterson, N. J., 200 tons, to American Bridge Co.

New York-New Jersey Tunnel Commission, New Jersey approach to vehicular tunnel, 3550 tons, to McClintic-Marshall Co.

Albright Grocery Co., Akron, Ohio, warehouse, 875 tons, to Burger Iron Works.

Bourne-Fuller Co., Cleveland, warehouse, 450 tons, to Jones & Laughlin Steel Corporation.

Apartment house, Toledo, Ohio, 300 tons, general contract awarded to A. Bentley & Sons Co., bids for steel taken.

Appalachian Power Co., transmission towers, 300 tons, to American Bridge Co.

New York Central Lines, bridge repairs, 150 tons, to Jones & Laughlin Steel Corporation.

Bradford Brick & Tile Co., Bradford, Pa., building, 125 tons, to Jones & Laughlin Steel Corporation.

State highway bridge over Missouri River at Pierre, S. D., 1600 tons to Lakeside Bridge & Steel Co.

Two municipal bridges at Kaukauna, Wis., 600 tons, to Worden-Allen Co.

Santa Fe System, 1925 bridge requirements, 25,000 tons, to American Bridge Co.

Jewelers' Building, Chicago, 7500 tons, to American Bridge Co.

Illinois Central Railroad, shop buildings, 6400 tons, to American Bridge Co.

Spreckles Building, addition, San Diego, Cal., 2925 tons, to Virginia Bridge & Iron Co.

Alaska Railroad, bridges for main line in Alaska, 3067 tons, and bridge No. 3707 over Nenana River, Alaska, 580 tons, both to American Bridge Co.

Standard Oil Co., plant additions, Whiting, Ind., 1200 tons, to Mississippi Valley Structural Steel Co.

Cosden & Co., oil storage tanks for Southwestern location, 2000 tons, to Kansas City Structural Steel Co.

China & Japan Trading Co., structural work, 1000 tons, to Bates Expanded Steel Truss Co., Chicago.

Wayne County Road Commissioners, Detroit, grade separation work, 465 tons, to McClintic-Marshall Co.

Commonwealth Apartments, Cedar Rapids, Iowa, 350 tons, to Iowa Steel & Iron Works.

Children's Hospital, Pittsburgh, 1300 tons, to McClintic-Marshall Co.

Norristown-Penn Trust Co., Norristown, Pa., 500 tons, to McClintic-Marshall Co.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

Grain elevator, Houston, Tex., 1000 tons, estimates requested.

Auditorium, Youngstown, Ohio, 600 tons.

Vermont Marble Co., Proctor, Vt., mill, 600 tons, bids in.

New York Central, repair on highway bridge, 300 tons.

Atlantic Coast Line, two bridges, 250 tons.

Prudential Insurance Co., New York, building, 6000 to 7000 tons.

Cleveland Electric Illuminating Co., electric power station at Avon, Ohio, 5000 tons.

Ajax Mfg. Co., Cleveland, factory buildings, 350 tons, bids taken.

First Baptist Church, Cleveland, 1000 tons, bids asked for.

Pennsylvania Railroad, car dumper, Sandusky, Ohio, 800 tons, bids taken.

Wabash Portland Cement Co., Detroit, for plant at Osborn, Ohio, 1500 tons, scheduled for early letting.

Smith Brothers Hardware Co., Columbus, Ohio, addition to warehouse, 600 tons, bids close Dec. 1.

American Laundry Machinery Co., Rochester, N. Y., plant, 1100 tons, general contract to Ferro Concrete Construction Co.

Stevens Hotel, Chicago, 17,000 tons, plans to be issued soon.

Ohio Public Service Co., tower, 1500 tons.

Illinois Central Railroad, Burnside shop addition, Chicago, 585 tons.

Pennsylvania Railroad, Beaver River bridge, 3700 tons, bids received.

RAILROAD EQUIPMENT BUYING

Car Purchases Light, but Southern Pacific Is Expected to Inquire for 15,000—Chicago & North Western Closes

The foremost order of the week was the award by the Chicago & North Western of 3200 cars, divided among five builders. The Great Northern again appeared as a buyer in the award of 1500 steel underframes and steel ends and roofs for 1000 cars. Locomotive purchases were of the smaller types and totaled 14 from two railroads. The Southern Pacific is expected to come into the market for 15,000 cars.

On Nov. 1, there were 11,095 locomotives in need of repair, according to the American Railway Association. This was 17.2 per cent of the number on line, and a decrease of 744 locomotives below the number in need of repair Oct. 15, when there were 11,839, or 18.4 per cent. The railroads during the last half of October repaired in their shops 36,233 locomotives, an increase of 3622 compared with the repairs made during the first half of the month.

There was a decrease of 6683 freight cars in need of repair on Nov. 1 compared with Oct. 15. The total on Nov. 1 was 190,543, or 8.2 per cent.

The Great Northern Railway has closed on 1500 steel underframes with the Streator Car Co., 1000 steel ends with the Union Metal Products Co. and 1000 steel roofs with the Standard Railway Equipment Co.

The Illinois Central has placed 130 motor driven suburban cars with the Pullman Car & Mfg. Corporation and 85 trailer suburban cars with the Standard Steel Car Co.

The Chicago & North Western has placed 3200 freight cars as follows: 500 automobile and 500 box cars with the Western Steel Car & Foundry Co., 500 box cars with the Bettendorf Co., 500 stock cars with the Illinois Car & Mfg. Co., 500 flat cars with the Standard Steel Car Co., 500 automobile and 200 refrigerator cars with the American Car & Foundry Co.

Armour & Co. has ordered 150 steel underframes from the Illinois Car & Mfg. Co. The Southern Pacific is expected to enter the market for 15,000 freight cars.

The Missouri, Kansas & Texas has ordered ten 8-wheel switch engines from the Lima Locomotive Works. The Mobile & Ohio has ordered 4 Mikado type locomotives from the Lima Locomotive Works.

NEW TRADE PUBLICATIONS

Steam Boilers.—E. Keeler Co., Williamsport, Pa. Booklet of 12 pages outlining the features of the company's Double-Duty boiler, recently placed on the market and which is intended for use as a power boiler or a steam or hot water heating boiler. Eight sizes are available from 35 to 130 hp. and for pressures up to and including 125 lb. Safety, economy of operation, low head room and large furnace volume are features emphasized. The facilities for cleaning, and the elimination of flat surfaces, pockets, water legs, mud rings, etc., are intended to provide unusual durability.

Wilke's Metals.—Metals Refining Co., Hammond, Ind. Booklet under the title of "Our Illustrated Sales Story Truly Told" sets forth history of the company and includes photographic reproductions of officers, members of the company's technical, sales and office staff. Pictures of the plant are included. The products of the company include lead oxides, calking lead, antimonial lead, line casting, babbitt and other metals. The booklet is featured as a prologue to "the sale."

Solenoid Brakes.—Whiting Corporation, Harvey, Ill. Circular describing the type C electric solenoid brake for crane service.

Gear Generators.—Lees-Bradner Co., Cleveland. Two circulars, Nos. 39 and 40. Circular No. 39, eight pages, is devoted to the 5A gear generator which is a production machine with universal features for a wide range of work. Two sizes are available, 14 and 19 in. swing. Circular No. 40 describes the No. 2 single purpose gear generator for the production of spur gears and spline shafts such as used in automobile transmissions. It is adapted for similar work within limits of 10 in. outside diameter. Features of construction and other essential information are clearly described.

Shapers.—Cincinnati Shaper Co., Cincinnati. Circular M 1924. Exclusive features of the company's Climax shaper, which is available in sizes from 16 to 32 in. for standard and heavy service are clearly described. Dimensions and specifications are given and there are numerous illustrations.

Iron and Steel Stock List.—Horace T. Potts & Co., Philadelphia. Fourteenth edition. Pages 160, 5½ x 7½ in. Lists sizes of refined and Swedish iron, soft and machinery steel, plates and sheets, tool and alloy steels, fencing and culverts and a variety of other material carried in stock. Standard extra lists are included and several pages are devoted to tables of weights, gages and other useful information. The booklet is thumb indexed.

Tumbling Mills.—Whiting Corporation, Harvey, Ill. Catalog No. 174. Three standard types of tumbling mills are described and illustrated and also small tumblers for brass work, dry and water cinder mills. A cleaning department layout for an average gray iron foundry of 50 tons capacity is given.

Side-Blow Converter.—Whiting Corporation, Harvey, Ill. Catalog No. 173. The side-blow converter process of making steel castings is compared with other processes and the particular field of the side-blow converter outlined. A typical day's run is outlined in several pages and the layout of a combination gray iron and steel foundry is described and illustrated.

Heat Exchanger.—Griscom-Russell Co., 90 West Street, New York. Leaflet, form 201. Outlines construction and operation of Twin Multiwhirl and Twin Vaneflo exchangers.

Milling Machines.—Cincinnati Milling Machine Co., Cincinnati. Booklet of 48 pages, 8½ x 11 in., under title of "Service That Saves." Describes and illustrates more than 50 installations of the company's machines, each of which is claimed to have affected definite economies. They are presented as examples of the work done by the company's engineering service department, and the data are attractively arranged. Several machines are illustrated and there are brief descriptions of the company's grinders.

Portland Cement and Concrete.—Portland Cement Association, 111 West Washington Street, Chicago. An eight-page rotogravure story of the application of Portland cement and concrete. A wide variety of uses is pictured.

Leveling Equipment.—Warren-Knight Co., Philadelphia. Folder No. 118, describing the Sterling engineers, Wye level, the Delaware River bridge model of this instrument being illustrated.

Floor-Operated Electric Hoists.—Shepard Electric Crane & Hoist Co., Montour Falls, N. Y. Comprehensive booklet of 60 pages outlining the features of the company's floor-operated electric hoists, the entire line of more than 30 types being described and illustrated. The various hoists are described in boxes on the left-hand pages, and opposite the description, on right hand pages, are shown an installation of the hoist and a portrait view of the machine. Immediately following each group of hoists and on separate pages, there are clearance drawings, dimensions and information relating to capacities. Features of general construction are outlined in a separate section. In addition to its comprehensiveness, the booklet gives essential information in an unusually convenient form.

Hydraulic and Hydro-Pneumatic Presses.—Metalwood Mfg. Co., Leib and Wight Streets, Detroit. Catalog, 88 pages, 8½ x 11 in. A wide variety of hydraulic and hydro-pneumatic arbor and forcing presses, broaching forcing and forming presses, straightening presses, metal forming presses, vulcanizing presses and plastic material forming presses are described and illustrated. Capacities, dimensions and other essential data are given. Information is given on the Hele-Shaw pump unit and accumulators and other accessory equipment. There are more than 100 illustrations.

U-Tube Storage Heater.—Griscom-Russell Co., 90 West Street, New York. Bulletin No. 242, 16 pages. Describes the construction and operation of the Russell U-Tube storage heater, for heating water in dyehouses, hotels, laundries, etc., where the supply of exhaust steam is limited. Comprehensive tables for use in selecting a suitable heater for given conditions are included. A double page insert of templates for storage tanks, covering all of the Russell storage heater tank lengths and diameters and indicating the principal pipe connections, is intended for use in laying out a heating system.

Lighting Plants.—E. I. Pearson Corporation, Cincinnati. Four-page circular describing the Cincinnati lighting plant, which incorporates automatic starting and stopping features. Three models are available, two of which are for lighting and one for battery charging. The outfit consists of a direct-connected gas engine and generator, and compactness is a feature, the dimensions overall being 16 x 22 x 18 in. The weight of the generating set is 125 lb. and with batteries the weight is 250 lb.

Car Dumper.—Wellman-Seaver-Morgan Co., Cleveland. Bulletin No. 83. The operation and construction of the company's revolving cardumper, which is intended for handling all types and sizes of open-type railroad cars is outlined. Simplicity and convenient adaptability are features emphasized as well as comparatively low cost for installation and low operating cost.

Portable Cylinder and Piston Grinding Machine.—Gisholt Machine Co., Madison, Wis., six-page folder describing the company's Du-All Grinder which is a general utility machine designed primarily for garages, repair shops and service stations. It may be employed for grinding both cylinders and pistons and is adaptable also to a variety of other work such as grinding jigs, etc. The machine is compact and portable and takes its power from the lighting circuit. It will grind holes from 2½ to 5¼ in. in diameter and up to 14 in. in length. Spindles for other diameters may be provided. Accuracy is a feature emphasized. Automatic reverse, which operates on each up or down stroke is provided. An external grinding attachment permits grindings of pistons and bushings for fitting. A cross head pin keeps the pistons in place on the stepped face plates. A wheel truing device, which may be located at three different points on the base, is provided. The numerous illustrations include views of the machine set up for various classes of work.

A unique booklet under the title of "Critical Analysis of a Heavy Duty Lathe," has been published by the R. K. Le Blond Machine Tool Co., Cincinnati. It is made up of 23 pages 6¼ x 9¾ in., and is intended to answer the questions that an engineering buyer would naturally ask before making his purchase. Features of construction of the company's 25-in. heavy-duty engine lathe are shown on "tip-in" illustrations on the right-hand pages. Questions and answers relating to the capacity and construction of the machines are given on the left-hand pages. Essential information is clearly and concisely given, and the arrangement of the booklet should prove helpful to a buyer in selecting the equipment wanted.

Machinery Markets and News of the Works

BUYING MODERATE

Increase in Sales Expected to Follow Expansion of Inquiry

Railroad Lists Probable in Near Future—Equipment Wanted for Vocational Schools

INCREASED volume of inquiry continues to feature the market and, although buying remains moderate, the outlook is regarded as unusually encouraging. There has been an increase in orders for single tools from scattered sources.

Purchases by the railroads promise to be a factor in the near future and there are hopes that orders for steel mill equipment will follow improved conditions in that industry.

A formal inquiry for several machines is expected shortly from the Chicago & North Western, as well as a list from the Illinois Central.

Buying by the Nash Motors Co. and its subsidiary, the Ajax Motors Co., continues. The complete program, including equipment placed, is said to include 350 machines, which with tooling will involve between $1,000,000 and $2,000,000.

The Chicago Board of Education will take figures Dec. 2 on 24 lathes.

An inquiry is out for ten lathes for an East Boston, Mass., school.

Action on part of the list of 70 machines for the Collinwood high school, Cleveland, is expected this week.

The International Harvester Co. is expected to issue a list soon for an addition to its Fort Wayne, Ind., works.

The Power Mfg. Co., Marion, Ohio, is in the market for several tools.

The Wilson Foundry & Machine Co., Pontiac, Mich., has commenced buying against its list, which is said to involve an expenditure of $600,000.

The General Electric Co. is asking for prices on a small lot of tools.

Further purchasing of a few machines by the Shibaura Engineering Co., Japan, is expected in the near future.

New machine tool orders were 13 per cent better in October than in September, based on the index numbers of the National Machine Tool Builders' Association. The October index was 23.48 against the September index of 18.06.

New York

NEW YORK, Nov. 25.

A MAJORITY of actual purchasing and much of the current inquiry is still being contributed by the railroads. At present inquiries from this source are largely confined to requests for prices on single tools for estimating purposes on the 1925 appropriations, but the number of these requests is sufficiently large to give rise to the belief that there may be some fairly satisfactory lists brought out by the railroads after the first of the year. As yet inquiries for single tools, issued after election, have not developed into business. The General Electric Co. is asking for prices on a small lot of tools and further purchasing of a few machines, on which bids have been in for some time, is expected before long by the Shibaura Engineering Co., in Japan, active on a large list several months ago.

Among recent railroad purchases were a 5-ft. and a 6-ft. radial drill, two 100-ton bushing presses, an 800-lb. steam hammer, a 53-in. boring and turning mill and a 42 x 42 in. by 14 ft. planer by the Southern Railway. The Cleveland, Cincinnati, Chicago & St. Louis has closed on a carwheel lathe, a carwheel borer and a combination journal and axle lathe.

Property has been acquired by the Brooklyn Union Gas Co., 176 Remsen Street, Brooklyn, at Canarsie Lane, Ditmas Avenue and East Eighty-seventh Street, as a site for new mechanical and service buildings, including meter shops, precision machine department, gas appliance department and other divisions. Existing structures will be remodeled and additional buildings constructed, the latter work to proceed early in the spring. The entire project is reported to involve $350,000.

Pieper's Garage, Inc., St. Nicholas Avenue and 225th Street, New York, Charles Pieper, president, will soon take bids on revised plans for an addition to its service, repair and garage building, comprising a four-story structure, 89 x 103 ft., at 225-39 St. Nicholas Avenue, to cost approximately $60,000. Harold Berkmire, 1819 Broadway, is achitect.

The New South Wales Government Railways and Tramways, Chief Electrical Engineer's Office, Sydney, Australia, will receive bids until Jan. 28 for steam-driven boiler-feed pumps for the White Bay power house.

The Belmont Metal Co., 2502 Webster Avenue, New York, has plans for two one-story additions, 25 x 100 ft., and 20 x 75 ft. Edward Hoffman is company architect.

The Martin Parry Corporation, Bridge Plaza, South, Long Island City, manufacturer of automobile truck bodies, with headquarters at York, Pa., has leased a building on Hulst Street, comprising about 18,500 sq. ft., as a factory branch and service works.

Whinston & Hurwitz, 41 West Thirty-third Street, New York, architects, have plans for a six-story automobile service, repair and garage building at Henry and Forsyth Streets, 50 x 180 ft., utilizing a former factory, estimated to cost $80,000.

The Dubilier Condenser & Radio Corporation, 48 West Fourth Street, New York, has acquired a local factory in the vicinity of its present works, and will take immediate possession. It will be remodeled and machinery installed to triple, approximately, the present production facilities.

The Bronx Gas & Electric Co., 43 Westchester Square, New York, has plans for a one-story automatic substation, 85 x 96 ft., to cost approximately $85,000. W. W. Knowles, 3 Bridge Plaza, Long Island City, is architect.

The State Electricity Commission, Melbourne, Australia, will take bids until Dec. 20 for switch-gears and accessories for the Yallourn Power Scheme. Plans and specifications on file at the offices of the Bureau of Foreign and Domestic Commerce, 734 Customs House, New York, and First National Bank Building, Chicago. R. Liddelow is secretary of the commission.

Motors, power equipment, conveying and other machinery will be installed in the eight-story printing plant to be constructed at Atlantic and Flatbush Avenues, Brooklyn, by the Brooklyn *Daily Times*, estimated to cost $500,000, for which a general contract has been let to the William Kennedy Construction Co., 215 Montague Street, Brooklyn.

The J. & B. Automobile Co., 12 Division Street, Amsterdam, N. Y., is considering plans for a three-story service,

repair and garage building to cost approximately $65,000. Samuel Jacobson is general manager.

The Minister of Railways and Harbors, Cape Town, South Africa, will soon call for bids for the construction of an electric generating plant, automatic substations, transmission lines, etc., in connection with the proposed electrification of suburban railroad lines in this district. Tenders will be received through the High Commission for South Africa, Trafalgar Square, London, England.

The Thomas Wright Co., Inc., 245 Monmouth Street, Jersey City, N. J., manufacturer of automobile and wagon bodies, has had plans drawn by E. M. Patterson, 76 Montgomery Street, architect, for a one-story addition to cost approximately $20,000.

Fire, Nov. 17, destroyed a portion of the plant of the Flintkote Co., Ridgefield Park, N. J., manufacturer of roofing products, etc., with loss estimated at $80,000 including equipment. It is planned to rebuild. Headquarters of the company are at 31 St. James Street, Boston, Mass.

The Board of Education, Westfield, N. J., plans the installation of manual training equipment in its proposed junior high school estimated to cost $750,000, for which preliminary plans are being drawn by Wilder & White, 16 East Forty-first Street, New York, architects. Howard C. Wick is president of the school board.

The Board of Education, City Hall, Newark, N. J., R. D. Argue, secretary, is asking bids until Dec. 2 for a quantity of equipment and supplies for manual training, etc., in local schools, including machinery, steel lockers, electrical supplies, print shop supplies, iron and steel, and other apparatus. Specifications on file at the office of the Department of Supplies, address noted.

The Board of Water Commissioners, Perth Amboy, N. J., has passed a resolution to provide for an appropriation of $155,000 for the construction of a mechanical filter plant for iron removal from city water at Runyon.

The Garod Corporation, Passaic and Malvern Streets, Newark, manufacturer of radio sets and equipment, has leased a portion of the building at 124-26 Adams Street for a branch plant. The present factory will be maintained.

The Water Commission, Dover, N. J., plans the installation of pumping machinery and other equipment at the municipal waterworks, for which a portion of an available fund of $100,000 will be used.

The Allied Products Corporation, care Roswell Cooper, Little Falls, N. Y., is in the market for equipment for a factory to manufacture electric table heaters and heating equipment.

The Thermiodyne Radio Corporation, Plattsburg, N. Y., has been organized with 300,000 shares of stock, no par value, to manufacture electrical and radio apparatus. Arrangements are being made for constructing an addition which will afford 25,000 sq. ft. of floor space. Operations at present consist only of assembling. F. G. Jaraben is assistant to the president.

H. G. Schoonmaker & Sons, Inc., 30 Church Street, New York, is in the market for two ¾-yd. Marion steam shovels, No. 21 caterpillar traction.

The Tel-A-Way Signal Co., Boardman Building, Troy, N. Y., incorporated with $100,000 capital stock to manufacture radiator caps, plans to manufacture by contract and is in the market for wire, gaskets, switches, screws, springsnaps, etc. Joseph A. Petnel heads the company.

The E. E. Steiner Co., 2 Avenue C, Newark, N. J., is planning to purchase an 8-ft. squaring shear, 14-gage capacity.

Buffalo

BUFFALO, Nov. 24.

PLANS are being prepared by the American Radiator Co., 1 Austin Street, Buffalo, for a one-story addition to its Austin Arcola plant, estimated to cost $55,000, with equipment.

The Iroquois Pulp & Paper Co., Thomson, N. Y., is asking bids on a general contract for a two-story addition to its plant at Ballston, N. Y., 48 x 150 ft., estimated to cost $110,000 with machinery. Charles E. Eaton, Trust Co. Building, Watertown, N. Y., is architect. Luther Waite is secretary and treasurer.

The Wurlitzer Mfg. Co., North Tonawanda, N. Y., manufacturer of pianos and musical instruments, has work in progress on an addition to its plant on the Niagara Falls Boulevard, to cost $90,000. The machinery installation will provide for an increase in the working force to 1200 operatives. Headquarters are at 121 East Fourth Street, Cincinnati.

The Auto Frame Springs Co., Inc., 376 North Oak Street, Buffalo, is completing plans for the establishment of a general works and repair plant and will install equipment at an early date.

Fire, Nov. 20, destroyed a portion of the plant of the Plastergon Wall Board Co., foot of Philadelphia Avenue, Buffalo, consisting of a one and one-half story building, with loss estimated at $200,000, including equipment and stock. It is planned to rebuild. William G. Saville is president.

The Pennzoil Co., 158 Pearl Street, Buffalo, is said to be arranging a fund of $150,000 for the construction of its oil storage and distributing works at Skillen Street and the Military Road, to replace a plant destroyed by fire several weeks ago. W. R. Birkmayer is in charge.

The Iroquois Door Co., 629 Exchange Street, Buffalo, is said to be arranging a list of equipment to be installed in its addition, for which plans recently were filed, reported to cost in excess of $35,000.

The American La France Fire Engine Co., Elmira, N. Y., has awarded a general contract to the H. K. Ferguson Co., for a one-story addition to its motor truck manufacturing plant at Bloomfield, N. J., 25 x 300 ft.

Fire, Nov. 22, destroyed the general offices and car repair shops of the Pennsylvania Railroad Co., at Olean, N. Y., with a loss of $250,000.

Manual training equipment will be required by the Board of Education, Buffalo, in connection with the erection of an electrical vocational school to cost $500,000, for which bids are being received on a general contract until Dec. 15.

Philadelphia

PHILADELPHIA, Nov. 24.

THE BURT MFG. CO., 1814 Ludlow Avenue, Philadelphia, manufacturer of metal ventilators and other sheet metal products, has plans under way for a four-story factory, 32 x 75 ft., at Ninth and McKean Streets, estimated to cost $35,000. H. H. Kline, Bulletin Building, is architect.

The Philadelphia Paper Mfg. Co., Nixon Street, Philadelphia, manufacturer of boxboard and kindred specialties, has filed plans for an addition to cost approximately $75,000, including equipment.

The Chamber of Commerce, Twelfth and Walnut Streets, Philadelphia, has received an inquiry from a company at Havana, Cuba, wishing to get in touch with American manufacturers of hardware, tools, etc. Also, from a concern in India, desiring to get in contact with manufacturers of oil engines and typewriters; and, from a company in Cuba, desiring to get in touch with manufacturers of toys.

The Tabor Mfg. Co., 6225 Tacony Street, Tacony, Philadelphia, manufacturer of foundry moulding machines, parts, etc., has taken title to the five-story factory at Tacony and Devereaux Streets, on a 5-acre tract for $135,000, to be used for expansion.

The A. H. Fox Gun Co., 4680 North Eighteenth Street, Philadelphia, manufacturer of firearms, will begin the construction of a three-story and basement plant, 90 x 162 ft., estimated to cost $75,000, for which a general contract recently has been let to W. S. Van Asdken, West End Trust Building, Philadelphia. Clarence E. Wunder, 1520 Locust Street, is architect.

The State Board of Education, Trenton, N. J., will build a one-story repair shop, and one-story laundry building, in connection with a new group of structures at the School for the Deaf, Trenton Junction. The entire project will involve about $500,000. Arnold Moses, Temple Building, Camden, N. J., is architect. The Stewart A. Jellett Co., 1200 Locust Street, Philadelphia, is mechanical engineer.

The New Jersey Lamp Mfg. Co., Stokes Avenue, Trenton, N. J., has authorized plans for rebuilding the portion of its factory destroyed by fire Nov. 19, with loss of $20,000 including equipment.

The American Road Machinery Co., Inc., Kennett Square, Pa., will take bids at once for two one-story additions, 100 x 125 ft., and 40 x 175 ft., to replace structures destroyed by fire several weeks ago. Philadelphia offices of the company are in the Commercial Trust Building. The William Steele & Sons Co., 219 North Broad Street, Philadelphia, is architect and engineer.

Fire, Nov. 18, destroyed a portion of the plant of the Bloomsburg Welding & Brazing Co., Bloomsburg, Pa., with loss of about $10,000. It is planned to rebuild.

The Reading Foundry & Supply Co., Pottstown, Pa., owned and operated by Fleck Brothers Co., Inc., 50 North Fifth Street, Philadelphia, manufacturer of plumbing supplies, pipe, etc., has awarded a general contract to Albert MacGregor, 1628 Vine Street, Philadelphia, for a one-story and basement building, 75 x 150 ft., to cost approximately $100,000.

The Crane Market

FOLLOWING the appearance of a fair volume of inquiry for single cranes after the election, there has been a period of quiet, but pending business is sizable and a number of inquiries are expected to close before the end of the year. Among companies that have recently entered the market is the General Electric Co., Schenectady, N. Y., asking for a 5-ton overhead crane and a small traveling jib crane for West Philadelphia, Pa. Inquiries still pending, on which bids are in, include a 60-ton overhead crane for the Arkansas Light & Power Co., through Ford, Bacon & Davis, New York; a 200-ton overhead crane for the New York Edison Co., through Thomas E. Murray, New York; three small cranes for the Southern Railway, Washington, and a 30-ton stationary electric hoist for the Phoenix Utility Co., 71 Broadway, New York, which is still considering a 100-ton overhead crane. Locomotive crane purchases have been light in the East, but the railroads provide considerable activity, partly in purchases and partly in requests for estimates in making 1925 appropriations.

Among recent purchases are:

N. P. Nelson Iron Works, Brooklyn, N. Y., a 5-ton, 31½-in. span, double I beam, hand power crane for Passaic, N. J., from Alfred E. Box & Co.

Public Service Production Co., Newark, N. J., for the Bath-Portland Cement Co., Sands Eddy, Pa., a 20-ton, 30-ft. span, 40-ft. lift, hand power crane from the Whiting Corporation and a 3-cu. yd. bucket crane from a middle western builder.

Atchison, Topeka & Santa Fe Railway System, Chicago, two 25-ton locomotive cranes from the Industrial Works.

Great Northern Railway, St. Paul, Minn., a 25-ton locomotive crane from the Industrial Works.

Chicago, Burlington & Quincy, a 20-ton locomotive crane, from the Industrial Works, and a 10-ton, 27-ft. span, 3-motor, gantry crane for Chicago, from the Milwaukee Electric Crane & Mfg. Co.

Taconic Mfg. Co., Taconicville, Mass., a 20-ton used Brownhoist locomotive crane, from Philip T. King, New York.

Duquesne Slag Products Co., Pittsburgh, a 25-ton locomotive crane from a mid-western builder.

Koss Construction Co., St. Louis, Mo., a 30-ton locomotive crane from the American Hoist & Derrick Co.

Ohio Power Co., Philo, Ohio, a 5-ton, 3-motor, monorail bucket crane from the Milwaukee Electric Crane & Mfg. Co.

Struthers-Wells Co., Warren, Pa., a 15-ton, 58-ft. span electric traveling crane, from the Shaw Electric Crane Co.

The Harrisburg Gas Co., Harrisburg, Pa., has disposed of a preferred stock issue totaling $500,000, the entire proceeds to be used for extensions and improvements, including work now in progress, comprising a gas-handling plant at Steelton, Pa. The project will include a boiler plant with two 125 hp. return tubular boilers and auxiliary apparatus. It is planned to construct two gas holders at Steelton. Luther S. Williams is manager.

The Board of Education, Annville, Pa., plans the installation of manual training equipment in the proposed high school to cost approximately $175,000, for which plans have been prepared by Edward Z. Scholl, Reading, Pa., architect.

The Charles Schutte Body Co., West End, Lancaster, Pa., manufacturer of automobile bodies, has plans for a two-story addition, 75 x 145 ft., to cost approximately $45,000. Fred H. Muhlenberg, Ganster Building, Reading Pa., is architect.

The Middletown Car Co., Middletown, Pa., will rebuild the portion of its forge shop destroyed by fire Nov. 20, with loss estimated at $30,000 including equipment.

Chicago

Chicago, Nov. 24.

PURCHASES by the Nash Motors Co. and its subsidiary, the Ajax Motors Co., continue to be the leading feature of the market. For the Ajax plant at Racine orders have been placed for three board drop hammers and additional special machine-tool equipment, including 11 automatic chucking machines and two Gisholt Simplimatics. Orders for standard machines will be placed shortly. The complete program of the Nash interests, including the orders thus far placed, is said to embrace 350 machines, which, with tooling, will involve between $1,000,000 and $2,000,000.

Railroad buying promises to be a factor in the near future. The Chicago & North Western, which has been taking figures for estimating purposes for several weeks is expected shortly to issue a formal inquiry for a considerable number of tools. The Illinois Central likewise has prepared an extensive list which is ready to be sent out at any time. Tentative figures taken by the Burlington for its subsidiary, the Fort Worth & Denver City, will no doubt bear fruit in orders within the next few months. The equipment is needed for a new shop which is to be built in Texas. The Illinois Central has issued inquiries for a car axle journal turning machine and a forging machine.

The Chicago Board of Education, which made extensive purchases for the local high schools this fall, will take figures Dec. 2 on 12 14-in. x 5-ft. variable speed motor-driven engine lathes and 12 14-in. x 6-ft. constant speed geared head motor-driven lathes.

The improved condition of the steel market has raised the hopes of machinery dealers for a revival of equipment buying among the mills. The American Steel & Wire Co. has put out inquiry for a 6-ft. radial drill for its Waukegan plant and a 5-ft. radial drill for its DeKalb mill. It is reported that the Illinois Steel Co. has appropriated $12,000,000 for the construction of a large power house and additional coke ovens at its Gary steel works. A source of encouragement is found in an increase in the number of scattered orders for single machine tools and in heavier store trade. Moreover, the shopping among local machine tool houses is actually resulting in considerable business. As the winter season approaches, radio manufacturers are becoming busier and are placing orders for equipment, particularly for punch presses. An organization which is developing an automatic oil burner for heating dwelling houses has placed a $3,600 order for several miscellaneous tools, including milling machines, precision bench lathes, upright drills and shapers.

The Pacific Fruit Express Co. is taking figures on shop buildings to be constructed at Nampa, Idaho, involving 550 tons of structural steel.

The Engineering Appliance Co., 2217 East Seventy-ninth Street, Chicago, recently incorporated with $10,000 capital stock, will manufacture technical appliances related to the heating and electrical trades, such as oil burners, electric control apparatus, valves, radio parts and sets. It will also operate a sales office for a number of standard manufactured products, such as pumping and refrigeration equipment. The acquisition of a manufacturing plant is still problematical and for the present parts will be produced on job contracts and assembled in the company's shop at the address given. The officers are: President, Kalman Steiner; treasurer, Irving H. Cohen; secretary, Julius L. Steiner.

The Victor Adding Machine Co., 319 North Albany Avenue, Chicago, will receive bids through S. Milton Eichberg, 64 West Randolph Street, on a three-story factory, 200 x 250 ft., on Rockwell Street, south of Irving Park Boulevard, to cost $250,000.

The Premier Lithographing Co., 1855 North Halsted Street, Chicago, has awarded a general contract for a three-story reinforced concrete addition, 60 x 80 ft., to cost $70,000.

The Crane Co., Chicago, has awarded a general contract for a one- and two-story foundry addition, 300 x 520 ft., at 3303 West Pershing Road, to cost $1,000,000.

The Chicago Faucet Co., 2712 North Crawford Avenue, Chicago, has awarded contract for a two-story plant, 54 x 62 ft., at 2700-08 North Crawford Avenue, to cost $23,000.

The Vilter Mfg. Co., manufacturer of Corliss engines and refrigerating machinery, Milwaukee, has bought a site for an assembly plant and warehouse at 208-14 West Nineteenth Street, Kansas City, Mo. A two-story building, 50 ft. x 125 ft., will be erected.

The Northeastern Iowa Power Co. will erect a hydro-electric power plant at Mitchell, Iowa, to cost $250,000.

The Northern Machinery Co., Minneapolis, is inquiring for a 10-ft. power squaring shear for handling ¼-in. plates; also a 10-ft. 3/16-in. capacity belt driven brake, similar to the George A. Ohl & Co. make.

The Crown Iron Works Co., Minneapolis, is inquiring for a gate shear to be used on ⅜-in. material.

Plans have been completed by the Oliver Iron Mining Co., Tower, Minn., for rebuilding its repair and machine shop, recently destroyed by fire, with a loss of $25,000. Some equipment will be required.

The Linwood Cement Co., 713 Kahl Building, Davenport, Iowa, has acquired property about 7 miles from the city and has plans for a new mill, with power house and machine shop, estimated to cost $1,500,000 with machinery. The J. C. Buckbee Co., 38 South Dearborn Street, Chicago, is architect.

The American Steel Products Co., Macomb, Ill., manufacturer of agricultural equipment and tools, has awarded a general contract to the Truscon Steel Co., Chicago, for a one-story addition, 30 x 115 ft., estimated to cost $40,000.

The Holly Sugar Corporation, Kittredge Building, Denver, Colo., will soon begin the construction of a new sugar mill at Holly, Mont., with power plant, estimated to cost close to $1,000,000 including machinery.

The City Council, Redfield, S. D., has authorized plans for a municipal electric light and power plant, and will soon call for equipment bids. Arthur L. Mullergren, Gates Building, Kansas City, Mo., is engineer.

The City Council, F. S. Gram, purchasing agent, Minneapolis, Minn., will take bids until Dec. 9 for equipment for a proposed garbage incinerator plant to cost approximately $200,000, including boilers, air compressors and accessory power equipment, cranes, hoists, etc. N. W. Elsberg is engineer.

The Iowa Falls Electric Co., 412 Washington Avenue, Iowa Falls, Iowa, has tentative plans for the construction of a hydroelectric generating plant to cost $250,000.

New England

BOSTON, Nov. 24.

THE buying movement in machine tools in this district, noted a week ago, proved but a flurry. Business has quieted down and is confined to a single tool here and there, mostly used equipment. Some New England machine-tool builders are increasingly busy, however, and in at least one instance it has been necessary to increase working forces. The Putnam Machine Works, Fitchburg, Mass., of Manning, Maxwell & Moore, Inc., railroad shop tools, has taken on approximately 75 additional employees. A Hudson, Mass., milling machine manufacturer reports booking German business, and some other New England machinery builders are getting export business. An inquiry for a heavy duty shear in this market brought out the fact that nine weeks' delivery is the best the maker can do. Inquiries, like current sales, have fallen off. The largest inquiry at the moment is for 10 motor-driven lathes for an East Boston school. Much more equipment will be required for this school, but purchases will not be made for a year or longer.

The city of Boston has awarded contract for a $1,300,000 high school on White Street, East Boston. The main building will be three stories, 165 x 342 ft., and will contain machine and wood-working shops. The school commission is in the market for 10 motor-driven lathes.

The J. L. Roberts Engineering Co., 101 Tremont Street, Boston, is in charge of the erection of a machine shop at Stoughton, Mass., for the Greb Co., Inc., 173 State Street, Boston.

Conveying equipment and other machinery is required for a five-story, 90 x 133 ft., meat packing plant to be erected at Hudson, N. Y., for the C. A. Van Duesen Co. Monks & Johnson, 99 Chauncy Street, Boston, are the engineers.

A revision in plans is being made for a 40 x 80 x 60 ft. coal pulverizing plant contemplated by the Narragansett Electric Co., Providence, R. I. Jenks & Ballou, 10 Weybosset Street, that city, are the engineers.

Edward G. Murphy, 1 East Avenue, Norwalk, Conn., has awarded contract for an ice plant for which conveying and other machinery is required. Frank H. Bissell, 157 East Forty-fourth Street, New York, is the architect.

Fire, Nov. 18, destroyed the plant of the Vermont Milling Products Co., Fair Haven, Vt., manufacturer of ground slate for roofing purposes, etc., with loss estimated at $400,000 including machinery.

The Standard Oil Co. of New York, 50 Congress Street, Boston, has filed plans for the construction of an addition to its East Boston storage and distributing plant, Chelsea Street, to cost approximately $100,000 including equipment.

The Woburn Degreasing Co., Bedford Street, Woburn, Mass., has awarded a general contract to the D. H. Walker Co., 10 Fletcher Street, Lowell, Mass., for a new one-story plant, 58 x 100 ft., to replace its works recently destroyed by fire, estimated to cost $100,000 including equipment.

The Acme Apparatus Co., 186 Massachusetts Avenue, Cambridge, Mass., manufacturer of transformer equipment, will proceed with foundations for its one and three-story additions, 26 x 68 ft., and 35 x 50 ft., for which a general contract recently was let to Carl D. Hall, 689 Massachusetts Avenue.

Johnson & Bassett, Inc., 114 Foster Street, Worcester, Mass., manufacturer of textile frames and other textile mill equipment, is erecting a six-story addition to cost approximately $75,000. The E. D. Ward Co., 82 Foster Street, is general contractor.

The City Water Commission, Worcester, Mass., plans for the installation of a third pumping unit at the Wachusetts Reservoir, for which a portion of a $50,000 appropriation will be used.

St. Louis

ST. LOUIS, Nov. 24.

THE McKNIGHT VENEER MILL, Helena, Ark., has preliminary plans for rebuilding of the portion of its mill at West Helena, recently destroyed by fire with loss of $45,000 including equipment.

The Oklahoma Natural Gas Co., 117 West Fourth Street, Tulsa, Okla., has awarded a general building contract to Breman & Rooney, Tulsa, for the construction of a one and one-half story machine shop, 25 x 42 ft.

The Atlas Iron Works, St. Louis, has inquiries out for an electric traveling crane, 7½ to 10-tons capacity, 50 to 65 ft. span, with three-phase, 60-cycle, 220-volt motor.

Frank H. Blair, Altoona, Kan., and associates, are planning for the organization of a company to construct and operate a plant at Miami, Okla., for the manufacture of baking machinery, ovens and kindred equipment.

The Tulsa Rig & Reel Mfg. Co., Atlas Life Building, Tulsa, Okla., manufacturer of oil rigs and oil well machinery, has acquired the property of the Weleetka Lumber Co., Holdenville, Okla., for a branch plant. Plans are under way for enlargements and the installation of additional equipment. John Boyd is general manager.

The Southwestern Light & Power Co., Oklahoma City, Okla., is said to be planning for enlargements in its steam-operated electric generating plant at Lawton, Okla., with the installation of additional machinery, estimated to cost $200,000. E. R. Ernsberger is general manager.

The Consumers Light & Power Co., Ardmore, Okla., will make extensions and improvements in its plant and system and install additional equipment to cost approximately $100,000.

The Kaysing Structural Iron Co., 2710 North Twenty-fifth Street, St. Louis, has plans under way for a new two-story works at Clinton and Seventeenth Streets to cost $55,000 with equipment.

The Bald Hill Mining Co., St. Joe, Ark., recently organized, will operate a concentrating plant at Cave Creek, Ark., for the production of lead and zinc. The company plans to purchase a 60-hp. steam engine and auxiliary equipment and other apparatus. C. E. Myles, Harrison, Ark., is construction engineer, in charge.

The King-Bee Auto Accessory Mfg. Co., 2502 Cass Avenue, St. Louis, incorporated with capital at $30,000 to manufacture as indicated, proposes to add equipment to its plant, including screw machines, punch presses and other machinery of special design. O. Trova is president.

Detroit

DETROIT, Nov. 24.

PRELIMINARY plans are being prepared by the Petoskey Cement Co., Petoskey, Mich., for additions to double the present capacity, reported to cost $400,000 with equipment.

The Board of Public Works, Detroit, is considering plans for the construction of a steam power plant, oil-operated, for the receiving hospital, police building, and other municipal structures, estimated to cost $350,000. Bids will soon be asked for equipment.

The Detroit Edison Co., 2000 Second Avenue, Detroit, is said to be considering the construction of a hydroelectric generating plant near Delhi, Mich., to cost $500,000. Work will begin next year. A. S. Douglass is construction engineer. Arrangements have been completed for a two-story storage and distributing plant, 100 x 162 ft., to cost $175,000 with equipment-handling and other apparatus.

The American Vitrified Products Co., Grand Ledge, Mich., manufacturer of sewer pipe, etc., has plans for the rebuilding of the portion of its works recently destroyed by fire, with loss of $200,000 including equipment.

The Mac Sim Bar Paper Co., Otsego, Mich., has awarded a general contract to H. L. Vanderhorst, Main and Thompson Streets, Kalamazoo, Mich., for a one and two-story addition to cost $85,000. Billingham & Cobb, Press Building, Kalamazoo, are architects and engineers. C. E. Nelson is president and general manager.

The American Boiler & Foundry Co., Milan, Mich., is establishing a local plant and will soon begin operations.

The A. C. Spark Plug Co., Flint, Mich., has asked bids on a general contract for a one-story addition, 100 x 300 ft., to cost approximately $90,000, for the manufacture of automobile accessories. It is a subsidiary of the General Motors Corporation, Detroit, and plans were drawn by the engineering and architectural department of the latter organization.

The Lieberman & Gittlen Metal Co., 600 Pleasant Street, Southeast, Grand Rapids, Mich., has awarded a general contract to P. R. Barns, 1836 Linden Street, Southeast, for a one-story foundry, 40 x 121 ft. H. D. McEachron, Association of Commerce Building, is architect.

Cleveland

CLEVELAND, Nov. 24.

MACHINERY sales were light the past week but a number of inquiries came out for lots of four or five machines. The National Carbon Co. made a few additional purchases and the Power Mfg. Co., Marion, Ohio, is in the market for several tools. A number of manufacturers in this territory are planning extensions which will probably necessitate the purchase of additional equipment, although the trade has not yet been advised of the machinery requirements. Very little business is coming from the automobile industry either in Ohio or Michigan. The list of 70 machines for the Collinwood high school, Cleveland, is still pending, but it is expected that some of this business will be placed this week. Heavy handling equipment builders are figuring on a car dumper for the Pennsylvania Railroad in Sandusky, Ohio.

The Cleveland Electric Illuminating Co., Cleveland, is preparing plans for a steam operated electric power plant to be erected at Avon, Ohio. The first unit will have 90,000 hp. capacity. It will be equipped with four 10,000 hp. boilers and two turbo-generators each of 45,000 kw. capacity. Pulverized coal will be used for fuel. Cranes and auxiliary equipment will be required. The current will be carried to Cleveland on a high tension transmission line on steel towers. In addition to the power plant a substation will be erected. The company expects to have an ultimate capacity of about 300,000 kw. at its Avon plant. It will probably start placing equipment orders soon after the first of the year. McClellan & Junkerfeld, 68 Trinity Place, New York, are the engineers.

The Ajax Mfg. Co., 3830 Lakeside Avenue, Cleveland, maker of forging machinery, is planning the erection of a new plant at Chardon Road and the Nickel Plate Railroad at Euclid, Ohio. It some time ago acquired a site with the view of erecting new works. Plans provide for a one-story machine and erecting shop, 130 x 364 ft.; one-story pattern shop, 60 x 60 ft.; one-story pattern storage building, 160 x 200 ft., and a boiler house and forge shop, 40 x 74 ft. It is expected that some additional machine-shop equipment will be required. J. R. Blakeslee is president of the company and H. D. Heman, general manager. The Withington-Roberts-Wright Co., 642 Swetland Building, Cleveland, is structural and mechanical engineer.

David Henderson & Son, 9117 St. Catherine Avenue, Cleveland, will shortly begin the erection of a $10,000 addition to their wood-working shop.

The Associated Investment Co., Guardian Building, Cleveland, has placed a contract with the Austin Co., Cleveland, for a one-story factory, 68 x 126 ft., at 1509 Hamilton Avenue.

The Mills Co., 5303 St. Clair Avenue, Cleveland, maker of lockers and other sheet metal equipment, plans the erection of a two-story addition, 28 x 64 ft.

The Cleveland Railway Co. has awarded contract to Thomson & Son, Cleveland, for a three-story and basement service garage and electric substation, 88 x 100 ft. The Watson Co., 4614 Prospect Avenue, Cleveland, is the architect.

The new factory building to be erected by the Henkel Claus Cutlery Co., Fremont, Ohio, will include a boiler house, warehouse, 50 x 146 ft., and a forge shop, 43 x 82 ft.

The Forest City Foundry & Mfg. Co., 1220 Main Avenue, Cleveland, has awarded a contract for a one-story addition, 80 x 119 ft.

The Goodyear Tire & Rubber Co., Akron, Ohio, has taken bids for the erection of a $200,000 extension to its machine shop. It will be three stories, 160 x 550 ft.

The Columbus Bed Spring Co., 456 East Livingston Avenue, Columbus, Ohio, has commenced the erection of a one-story building, 50 x 150 ft.

The American Drilling Machine Co., Massillon, Ohio, has taken bids for a one-story factory, 70 x 100 ft. J. C. McCullough, 43 South Sixth Street, Akron, Ohio, is secretary and treasurer.

The Nickel Plate Railroad has placed contract for a 68 x 82 ft. extension to its machine shop at Lima, Ohio.

The Tuscora Clay Products Co., Mineral City, Ohio, is having preliminary plans prepared for a $100,000 brick-making plant.

A manual training department will be provided in a high school to be erected in Willard, Ohio. Granville E. Scott, Citizens National Bank Building, Norwalk, is the architect.

Elmore, Ohio, has preliminary plans for a high school which will include a manual training department. Stophlet & Stophlet, Nasby Building, Toledo, are the architects.

The International Steel Tie Co., 16702 Waterloo Road, Cleveland, has filed plans for a one-story addition, for which some equipment will be required.

Preliminary plans are under way for the reorganization of the Sandusky Tool Co., Sandusky, Ohio, partially damaged by a tornado June 28. William F. Seitz, Jr., and George Schwer head the company. About $20,000 will be expended on repairs and improvements at once.

Construction has been started by the Aetna Foundry & Machine Co., Warren, Ohio, on a one-story machine shop, 110 x 180 ft.

The Toledo Ignition Co., Toledo, Ohio, has leased a one-story building, 100 x 100 ft., to be erected by the Toledo Factories Co., on Sixteenth Street. A general building contract has been let to Martin Suhbier, Toledo.

Bids have been asked on a general contract for an addition to the plant of the Vine Railway Appliance Co., Waterworks Drive, Toledo, Ohio, manufacturer of railroad equipment, to more than quadruple the present capacity. It will cost about $200,000 including equipment. Joseph L. Tillman is president.

Pittsburgh

PITTSBURGH, Nov. 24.

MACHINE tool business in this district does not reach very sizable proportions, but inquiry is so good that the lack of large orders just now is not seriously regarded. It is a general belief that 1925 will be a busy year in machine tools in general.

The Atlas Sanitary Mfg. Co., Zelienople, Pa., recently incorporated with capital stock of $100,000 to manufacture bath tubs, and other plumbing goods, has purchased 16 acres for the erection of a plant. Plans are being considered for building and equipment. H. B. Beighley, J. H. Danver and R. R. Goehring are the incorporators.

The National Radiator Co., Johnstown, Pa., is in the market for a Newton No. 4 vertical milling machine.

The machine shops of the W. J. Rainey, Inc., at Mount Braddock near Connellsville, Pa., were destroyed by fire Nov. 19. All of the equipment will have to be replaced.

Fire, Nov. 19, destroyed the breaker, blacksmith shop and compressor plant of the Wilson Hill Coal Co., Simpson, Pa., with a loss of $30,000. Plans for rebuilding are under advisement.

A cylinder reboring machine, lathe, drill press, air compressor and other equipment will be required by the Star Garage Co., Inc., St. James Building, Bradford, Pa., in connection with the erection of a two-story service station, 53 x 218 ft.

A bond issue for $4,000,000 is being sold by the Penn Public Service Corporation, Johnstown, Pa., operating electric light and power plants, a portion of the proceeds to be used for extensions and improvements. F. T. Hepburn is president.

The Auto Truck Equipment Co., 7511 Penn Avenue, Pittsburgh, has plans for a one-story addition. A. M. Hauber is president.

The Graff Kittanning Clay Products Co., Worthington, Pa., plans the installation of mechanical conveying equip-

ment, gas engine and auxiliary apparatus. R. H. Graff is general manager.

T. Edward Cornelius, Magee Building, Pittsburgh, architect, has plans for a three-story automobile service, repair and garage building at Coraopolis, Pa., 75 x 112 ft., estimated to cost $70,000, for which bids will be taken at once on a general contract.

The Struthers-Wells Co., Warren, Pa., manufacturer of riveted and welded steel plate products, etc., will proceed with the construction of a one-story addition estimated to cost $55,000.

The Norfolk & Western Railway Co., Roanoke, Va., is said to have plans under way for the construction of a one-story addition to the machine shop at its works at Williamson, W. Va., to cost approximately $40,000 with equipment.

Indiana

INDIANAPOLIS, Nov. 24.

CONTRACT has been let by the Peerless Foundry Co., 1853 Ludlow Street, Indianapolis, manufacturer of gray iron castings, to W. A. Sides, 121 Garfield Street, for two one-story additions, 30 x 123 ft., and 40 x 70 ft.

The Central Lumber & Mill Co., 247 Calumet Street, Hammond, Ind., has plans for two one-story additions, 100 x 100 ft., and 60 x 135 ft. respectively, to cost approximately $75,000.

The Dudlo Mfg. Co., Fort Wayne, Ind., manufacturer of electric wires, coils, etc., has awarded a general contract to the Buesching & Hagerman Construction Co., 402 Superior Street, for a one-story, saw tooth roof type addition, 100 x 300 ft., to cost approximately $100,000 with equipment. George A. Jacobs is president.

In connection with a project for the construction of an electric railroad from Elnora, Ind., to Owensboro, Ky., 85 miles, to be known as the Chicago, Rockport & Owensboro Electric Railway, property has been acquired at the first noted place for a steam-operated electric power plant to cost $200,000 with equipment. A. H. Kennedy, head of the Rockport Light & Water Co., Rockport, Ind., is interested in the project.

The Board of Public Works, City Hall, Indianapolis, has taken bids on revised plans for the municipal two-story automobile service, repair and garage building at New York and Alabama Avenues, 105 x 200 ft., to cost $100,000. The installation will include a complete machine shop. Frank B. Hunter, State Life Building, is architect.

The Indiana Service Corporation, Indianapolis, is preparing plans for the erection of a machine shop to cost $125,000. R. M. Feustel is president of the company.

Cincinnati

CINCINNATI, Nov. 24.

INQUIRY for machine tools continues heavy, and while no outstanding lists have been received, the majority of one and two lot machines being figured on will probably result in orders. The Wilson Foundry & Machine Co., Pontiac, Mich., has commenced buying against its list of special and standard machinery involving an expenditure of $600,000. Included in its purchases was a number of turret lathes placed with a Middle Western manufacturer. The Standard Sanitary Mfg. Co. has placed an order for 40 turret lathes for its Louisville plant. The Nash Motor Co. has bought several crank shaft and gap lathes for its Kenosha plant and is buying forging equipment for its Ajax plant at Racine. A cement company near Dayton, Ohio, is reported to have practically covered its requirements of machine tools from dealers' stocks. The International Harvester Co. is continuing its purchases for various plants, and is expected to issue a list shortly for an addition to its Fort Wayne, Ind., works. Requests for prices have been received from a number of railroad companies, to assist in formulating budgets, and it is expected that next year business from this source will be greater than for the past four years.

Fire, Nov. 19, caused damage of $40,000 to the Columbus plant of the Ohlen-Bishop Saw Co. It will probably be rebuilt.

The city of Dayton, Ohio, will shortly close a contract with the Dayton Power & Light Co. for the complete electrification of its water works pumping station. The cost of building and equipment is estimated at $300,000.

Manual training equipment will be installed in the new North Dayton elementary and junior high school for which plans have been prepared by Bruse E. Lloyd, architect. Bids will shortly be asked for construction.

The Downard-Manning Coal Co., Cincinnati, with offices in the Hall Building, Harlan, Ky., will remodel the coal mining plant on 1000 acres recently acquired from the Harlan-Fox Coal Co., to include the installation of electric power and other equipment.

The Glen Mary Coal Co., 227 James Building, Chattanooga, Tenn., has acquired about 1200 acres of coal lands in the vicinity of Glen Mary, Tenn., and plans the installation of mining machinery and electric power equipment for the development. The company is said to be contemplating the early purchase of a steam shovel, about 1¾ yd. capacity, steel dump cars, etc.

The Columbus Heating & Ventilating Co., 425 West Town Street, Columbus, Ohio, has awarded a general contract to the R. H. Evans Co., Atlas Building, for a two-story and basement addition, 60 x 122 ft., estimated to cost $32,000. G. C. Bowman is president.

The Glasgow Water Co., Glasgow, Ky., is planning to purchase a crude oil engine, about 50 hp., with auxiliary equipment. F. N. Bradford is general manager.

W. H. and E. P. Gibson, 233 West Fourth Street, Cincinnati, are considering plans for a three-story and basement automobile service, repair and garage building, to cost approximately $200,000, including equipment.

The Randall Machinery Co., 1723 Powers Street, Cincinnati, has inquiries out for a belt wheel for use on a Corliss engine, about 15 ft. diameter, 30 to 36-in. face and 13-in. bore, to weigh approximately 20,000 lb.

South Atlantic States

BALTIMORE, Nov. 24.

FIRE, Nov. 19, destroyed a portion of the three-story plant of the Cathedral Radiator & Fender Works, 1023 Cathedral Street, Baltimore, manufacturer of automobile radiators and other metal products, with loss of $18,000 including equipment. It is proposed to rebuild.

The Pennsylvania Railroad Co., Philadelphia, is said to have tentative plans for enlargements in its car shops at Todd's Cut, Wilmington, Del., including equipment and facilities to provide for passenger car repair work to be transferred from the present shops at West Philadelphia. In connection with the electrification of its lines in and about Philadelphia, it is proposed to use the West Philadelphia shops for repair work and parts production for electrical equipment and electrical rolling stock.

R. P. Johnston, Wytheville, Va., machinery dealer, has inquiries out for an electric crane, about 25 ft. boom, with ½-yd. capacity clam-shell bucket, operated with 60-cycle, 220-volt, a. c. motor; also for a portable conveyor, about 30 ft. long, operated with 60-cycle, 220-volt, a. c. motor.

The Foster Construction Co., Asheville, N. C., has inquiries out for a one-truck turntable, about 2½ tons capacity.

The Manufacturers' Equipment Co., Spartanburg, S. C., recently organized, is planning the establishment of a factory for the manufacture of cotton mill machinery and parts. It is understood that equipment will be purchased soon. Jesse W. Boyd, 340 Union Street, is president.

The Columbus Electric & Power Co., Columbus, Ga., is completing plans for a new hydroelectric generating station to develop an ultimate capacity of 100,000 hp. A steel tower transmission line about 150 miles long will also be built.

Fire, Nov. 17, destroyed a portion of the Calhoun Oil Mill, Calhoun, Ga., with loss estimated at $50,000 including equipment. Tentative plans are under way for rebuilding.

The Standard Sanitary Mfg. Co., with headquarters in the Bessemer Building, Pittsburgh, has filed plans for two five-story additions to its new branch plant at Baltimore, estimated to cost $125,000, for which a general building contract has been let to the B. A. Groah Construction Co., 847 West North Street, Pittsburgh.

W. P. Turner, 612 Mendenhall Street, Greensboro, N. C., is desirous of getting in contact with manufacturers in position to contract for the manufacture of small metal devices of thin sheet metal or brass, nickeled.

The Atlantic Ice & Coal Corporation, Washington Street Viaduct, Atlanta, Ga., has acquired about 8 acres on Macon Road, Fort Valley, Ga., as a site for its proposed ice-manufacturing and refrigerating plant, to develop a daily output of 150 tons, with cold storage capacity of 25,000 tons. It is estimated to cost $650,000 with equipment.

Lewter F. Hobbs, Inc., Norfolk, Va., machinery dealer, has inquiries out for a complete cableway, about 800 ft. span.

The American Piano Co., William Knabe Division, Eutaw and West Streets, Baltimore, has plans for the construction

of a five-story wood-working factory, estimated to cost $85,000 with machinery. Parker, Thomas & Rice, Union Trust Building, are architects. Charles F. Vogt is superintendent.

The Piedmont Rubber Co., Inc., P. O. Box 703, High Point, N. C., has awarded a general contract to A. S. Newton, High Point, for the construction of the first unit of a plant to manufacture automobile rubber products. It will be one-story, 35 x 125 ft., to cost $40,000 with equipment. D. L. Butler is president and general manager.

The Hackley-Morrison Co., 708 Lewis Street, Richmond, Va., machinery dealer, has inquiries out for a motor-generator set, three-phase, 60-cycle, 2200-volt, 300-kw. capacity.

The United States Engineer, Norfolk, Va., is asking bids until Dec. 15 for pumping equipment and auxiliary apparatus for the dredge Currituck.

Charles Meyers, Washington Grove, Md., and associates, will proceed with the construction of a one and five-story, ice-manufacturing and cold storage plant at Gaithersburg, Md., with one-story steam power plant, estimated to cost $100,000, including machinery.

The Board of Education, Rutherfordton, N. C., plans the installation of manual training equipment in the proposed three-story high school, 146 x 169 ft., estimated to cost $175,000, for which foundations will be laid at once. White, Streetor & Chamberlain, Gazette Building, Gastonia, N. C., are architects.

The Parker Metal Decorating Co., Howard and Ostend Streets, Baltimore, has filed plans for a one-story addition, 43 x 135 ft., to cost $12,000.

Pacific Coast

SAN FRANCISCO, Nov. 19.

PLANS have been filed by the International Motor Truck Co., 1628 East Seventh Street, Los Angeles, for a three-story assembling and parts plant, 230 x 289 ft., at 2001-21 South Alameda Street, to cost about $330,000 with machinery, for which a general building contract has been let to John M. Cooper, Marsh-Strong Building.

The Globe Electric Works, San Francisco, will soon begin the construction of a new plant at Fifteenth and Mission Streets to cost $45,000 including equipment.

J. E. Lonngren and associates, care of C. F. Freeland, Merritt Building, Los Angeles, have organized the Calawon Steel Products Co., to manufacture a line of steel and iron specialties. Options have been taken on a 3-acre tract at Santa Ana, and tentative plans are under consideration for a new factory.

The American Power & Light Co., 71 Broadway, New York, has acquired the Central Arizona Light & Power Co., with plant and system at Phoenix, Ariz., and vicinity. Preliminary plans are under advisement for extensions and improvements.

The National Electric Sign Co., Oakland, Cal., is having plans drawn by the Austin Co. for a one-story factory, 100 x 100 ft., at Thirtieth and Myrtle Streets, to cost close to $65,000 with equipment. The architect will also handle the general erection contract.

The Pacific Fruit Express Co., 65 Market Street, San Francisco, will proceed with the construction of its proposed refrigerating car repair plant at Nampa, Idaho, to cost about $500,000 with machinery. G. L. Bohn, Nampa, is plant engineer.

The Western Foundry Co., 546 Hood Street, Portland, Ore., is said to be planning for the rebuilding of the portion of its foundry recently destroyed by fire with loss estimated at $25,000 including equipment.

The Union Planing Mill Co., Stockton, Cal., has tentative plans for rebuilding the portion of its mill recently destroyed by fire with loss approximating $100,000 including machinery.

The National Vacant Seat Indicator Co., Los Angeles, care of A. B. Rosenthal, Hillstreet Building, architect, has awarded a general contract to the Wesco Construction Co., Marsh-Strong Building, for a one-story factory at Pomona, Cal., to cost $27,000.

The Moore-McKevitt Mfg. Co. has leased a factory building of 10,000 sq. ft. floor area at 3109 Adeline Street, Oakland, Cal., and will immediately start manufacturing piston rings and wrist rings. The company has acquired the machinery and equipment of the Gas Motor Parts Co., San Francisco, and has installed it in its new factory together with machinery acquired from the Pacific Hammered Piston Ring Co. The total equipment represents an investment of about $70,000. B. N. Moore, Jr., formerly of the Gas Motor Parts Co., San Francisco, and H. W. McKevitt of the McKevitt Co., San Francisco, are the principal owners.

The California Carburetor Co., 766 Pacific Building, San Francisco, organized with capital stock of $100,000 to manufacture automotive parts, will build a factory and is in the market for raw material and equipment. E. C. Easton is chief engineer.

Milwaukee

MILWAUKEE, Nov. 24.

CONFIDENCE is manifesting itself in the projection of numerous industrial programs involving new buildings and equipment. Practically none of this means immediate business for the machine-tool trade, since plans call for the undertakings early in the new year. Meanwhile a moderate number of orders for miscellaneous tools are being booked by local manufacturers, and dealers report an improvement in sales. Specifications are expected shortly from the Ajax Motors Co. of Racine, Wis., for a considerable list of equipment for its new plant.

The Aluminum Goods Mfg. Co., Manitowoc, Wis., has let the general contract to Walter W. Oeflein, Inc., 86 Michigan Street, Milwaukee, for a seven-story addition costing about $1,000,000, to be ready May 1. The two top floors will be used for offices, the remainder of the space to accommodate the operation formerly conducted in a branch plant at St. Louis which is being abandoned. George Vits is president and general manager.

Emmanuel L. Philipp, president Union Refrigerator Transit Co., Station C, Milwaukee, and associates are organizing a corporation to erect a transit cold storage warehouse estimated to cost $2,000,000 on the belt line in Milwaukee. While an architect and engineer have not been selected, sketches and estimates are being prepared. Financing is rapidly being completed and plans are to begin construction work about April 1. Lawrence C. Whittet, executive director Milwaukee Association of Commerce, 108 Mason Street, is secretary of the new organization.

The Fond du Lac, Wis., Water and Light Commission is asking bids until Dec. 4 for a one-story addition, 30 x 157 ft., to the main pumping station. Foundations will be laid during the winter and the superstructure erected next spring, at which time bids on engines, pumps, motors and auxiliaries will be taken. J. J. Breister is superintendent city water department.

The Racine Boiler & Tank Co., 1530 Sixteenth Street, Racine, Wis., is buying a few additional items of equipment to piece out a new department for the fabrication of structural material as an addition to its line of open top tanks, storage tanks, pressure tanks, riveted and welded tanks. H. L. Wratten is president and general manager.

The Marshfield, Wis., Hardware & Auto Co. has plans by Gustave A. Krasin, local architect and engineer, for a $45,000 building to house its automobile sales and service department. It will be 75 x 112 ft., two stories and basement, and include a public filling station as well as a machine and repair shop. Louis Grossen is secretary.

Gordon, Inc., Racine, Wis., is a new corporation with $50,000 capital stcok organized to manufacture automotive accessories, equipment, parts and materials. Production plans are being formulated. Principals are Max Gordon, 2304 Carmel Avenue; Morris Gordon, 2001 Chatham Street, and Harry Gordon, 1026 Marquette Street, Racine.

Gulf States

BIRMINGHAM, Nov. 24.

WORK will soon begin on a one-story foundry and machine shop at Gadsden, Ala., by the Eureka Foundry Co., manufacturer of iron castings, etc. Evan Owen is general manager.

The Southern Rock Asphalt Co., Albany-Decatur, Ala., has tentative plans for extensions and improvements in its plant and mining properties in the Flint district, estimated to cost close to $250,000 including equipment.

The Florida Lime Co., Ocala, Fla., has inquiries out for grinding, pulverizing, drying and other equipment.

The Oliver & Myers Mfg. Co., Canton and Young Streets, Dallas, Tex., manufacturer of furniture, has plans for a new factory, to cost close to $200,000 including equipment.

The Alexandria Ice & Cold Storage Co., Alexandria, La., has preliminary plans for an ice-manufacturing plant, in connection with a proposed icing station for the Missouri-Pacific and Texas-Pacific Railroads. The cost is reported at close to $75,000.

The Common Council, Canadian, Tex., has plans under way for a municipal electric light and power plant, for which bonds for $65,000, recently were voted.

R. E. Boggs, Age-Herald Building, Birmingham, machinery dealer, has inquiries out for two locomotives, 5-tons and 70-tons capacity, also for a number of dump cars, 12 to 16-yd. capacity.

The Board of Trustees, Alabama School of Trades and Industry, Gadsden, Ala., has acquired 110 acres at East Gadsden as a site for a new trade and vocational school. Plans are under way by the State Board of Education, Montgomery, for the initial buildings, for which foundations will be laid at an early date. Watt T. Brown is chairman of the board.

The Texas Tinners Supply Co., Houston, Tex., plans the purchase of sheet metal-working equipment, including punches, shears and other tools.

The Texas Power & Light Co., Dallas, Tex., has plans for the construction of a one-story automatic power substation to cost approximately $75,000.

The Texas Acetylene Co., Fort Worth, Tex., recently organized, has acquired about two acres and contemplates the construction of a new plant, estimated to cost $75,000 with machinery. C. K. Rickel, 2814 Mevith Avenue, Arlington Heights, Fort Worth, is one of the heads of the company.

The Sarasota Ice & Cold Storage Co., Sarasota, Fla., is arranging for the construction of a new plant with initial ice-making capacity of 50 tons per day, to cost approximately $100,000 with equipment.

The Board of Supervisors, Diston Island Drainage District, Moore Haven, Fla., C. L. Williams, secretary, is asking bids until Dec. 9, for pumping machinery, engines, and auxiliary equipment for two pumping plants, each with capacity of 130,000 gal. per min., in connection with a proposed reclamation project. Kirby & Myler, Moore Haven, are engineers.

Inquiries are being made by the Bo-Kay Perfume Co., 732 Forest Street, Jacksonville, Fla., for an electric hoist, saw table, motors, lockers and other equipment for a local plant, for which plans are being prepared by Roy A. Benjamin, Bisbee Building, architect. W. R. Sargent is vice-president.

The Mariand Refining Co., Ponca City, Okla., is completing plans for the construction of a pipe line from its oil properties in the Reagan County oilfields, to San Angelo, Tex., and vicinity, to cost close to $1,500,000 including pumping stations. E. W. Mariand is president.

Canada

TORONTO, Nov. 24.

A REVIVAL of interest is beginning to make its appearance in the Canadian machine-tool market. Industrial concerns are showing more tendency to buy and announcements continue to be made with regard to the erection of new plants in Canada by British and United States companies. It is also stated that the Canadian National Railways will shortly award equipment and rail contracts. Although sales the past week were chiefly confined to single items, the number and diversified nature of the tools reached a satisfactory total.

The Renfrew Machinery Co., Ltd., Renfrew, Ont., is in the market for a double acting geared press, 5-in. stroke.

The Preston Woodworking Machinery Co., Ltd., Preston, Ont., is in the market for an electric motor, 20 hp., two-phase, 60-cycle, 220 volts.

Fire which originated in the boiler room and spread throughout the molding and machine shops destroyed the plant of the Wabi Iron Works at New Liskeard, Ont., Nov. 17, with a loss of $40,000. It is expected to rebuild.

The Hoyt Metal Co., 355 Eastern Avenue, Toronto, manufacturer of lead pipe, babbitt metal, etc., has awarded contract for the erection of a new plant on a 5-acre site to cost $350,000. It will be of steel, brick and glass and cover about one acre. As soon as the main building is completed it is proposed to build additions and increase manufacturing as conditions warrant.

The Canadian Hart Wheels, Ltd., with plant and offices at Hamilton, Ont., manufacturer of abrasive grinding wheels, etc., has purchased the plant and property of the Canadian Potato Machinery Co., Galt, Ont., and will remove the equipment from Hamilton to the new location at Galt.

Hull, Que., will spend $60,000 on repairs and improvements to the electric power plant.

Revision of plans, specifications and costs for a large grain elevator to be erected at Halifax, N. S., for the Dominion Government, is under way and details are expected to be ready about Dec. 1.

The Galt British Forges, Ltd., is erecting a plant on Beverley Street, Galt, Ont., for the manufacture of heavy and light forgings. Edmund and Harley St. Clair, Toronto, are interested in the new concern.

The J. A. Gosselin Co., Ltd., Drummondville, Que., manufacturer of dairy machinery, has acquired the business and assets of the A. Bernard Industrial Co., at Fortierville, Que., manufacturer of transmission pulleys and supplies. The J. A. Gosselin Co., is building a new tool room and office to cost $20,000, while the entire plant is being remodeled for the production of a greater variety of equipment for the dairy industry. A special department will be opened for the manufacture of transmission equipment, pulleys, clutches, etc.

It is reported that the buildings, land and equipment of the Machine Agricole, Ltd., Montmagny, Que., which went into liquidation three years ago are to be sold at auction. During the war the plant was used for the manufacture of shells and at the close of the war additions were made to the works which entered into the manufacture of agricultural implements. For the past two years it has been operated by the receivers in a small way and it is now the intention to dispose of the entire works by public auction.

Western Canada

Additions and improvements are under way at the plant of the Consolidated Mining & Smelting Co., at Kimberley, B. C., in connection with which a new boiler house is under construction in which will be installed three new high pressure boilers. Considerable other equipment will be installed in connection with the program now under way.

The Canadian Western Cooperage Co., Victoria, B. C., will start work immediately on the erection of a mill to manufacture barrels, etc., to cost $125,000. L. Sweeney is local representative.

The Empire Mfg. Co., Vancouver, B. C., has started work on the erection of a machine shop. Equipment will be purchased.

H. G. Hutchings, 112 Market Street East, Winnipeg, Man., will rebuild an electrically operated stone crushing plant at Birds Hill, Man., and is interested in equipment.

Morris, Wheeler & Co. Are Incorporated

The firm of Morris, Wheeler & Co., which was established in 1828 by Israel Morris, the grandfather of the present partners, and for the last 97 years has been a prominent factor in the warehousing of iron and steel products, will on Jan. 1, 1925, be chartered and incorporated under Pennsylvania laws under the style of Morris, Wheeler & Co., Inc.

There will be no change in the management and the present partners will be officers in the new corporation. The same methods and trade policies will be consistently maintained.

The firm has had a long and successful history, having been located at 1608 Market Street from 1828 to 1916, and at its new and up-to-date plant at Thirtieth and Locust Streets since 1917. It was founded by Israel Morris, who shortly afterward associated himself with Jacob P. Jones, the firm being then Morris & Jones. In 1852 the partnership was changed by the addition of Andrew Wheeler, Sr., Joseph K. Wheeler and Richard H. Downing, and the title at that time was Morris & Jones & Co. In 1860, upon the retirement of Israel Morris, Jacob P. Jones, Joseph K. Wheeler and Richard H. Downing, the three sons of Israel Morris, namely, Theodore H., Frederick W. and William H., together with Andrew Wheeler, Sr., formed the present firm of Morris, Wheeler & Co. This continued until 1903, when Andrew Wheeler, Sr., died and was succeeded by his son Andrew Wheeler, a member of the present firm. In 1913, Theodore H. Morris died and was succeeded by his sons, William P., George L. and C. Christopher. Shortly after this, Frederick W. Morris, Sr., died and was succeeded by his son, Frederick W. Morris, Jr. William H. Morris retired from the firm in favor of his son, Reginald H. Morris. The partners of the present firm who will become officers of the new corporation are as follows: Andrew Wheeler, William P. Morris, Frederick W. Morris, Jr., George L. Morris, C. Christopher Morris and Reginald H. Morris.

The charter, which will be applied for on Dec. 15, gives broad privileges and covers the buying, selling, manufacturing and erecting of iron and steel of all descriptions.

Directors of the Acme Steel Goods Co., Chicago, have declared a cash dividend of $1.50 per share for the fourth quarter, thereby raising the annual cash distribution from $4 to $6 per share. A 10 per cent stock dividend was also distributed during the year.

Current Metal Prices

On Small Lots, Delivered from Merchants' Stocks, New York City

The following quotations are made by New York City warehouses.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipments in carload lots from mills, these prices are given for their convenience.

On a number of items the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE, under the general heading of "Iron and Steel Markets" and "Non-Ferrous Metals."

Bars, Shapes and Plates

	Per Lb.
Bars:	
Refined iron bars, base price	3.24c.
Swedish charcoal iron bars, base	7.00c. to 7.50c.
Soft steel bars, base price	3.24c.
Hoops, base price	4.49c.
Bands, base price	3.99c.
Beams and channels, angles and tees, 3 in. x ¼ in. and larger, base	3.34c.
Channels, angles and tees under 3 in. x ¼ in., base	3.24c.
Steel plates, ¼ in. and heavier	3.34c.

Merchant Steel

	Per Lb.
Tire, 1½ x ½ in. and larger	3.20c.
(Smooth finish, 1 to 2½ x ¼ in. and larger)	3.55c.
Toe-calk, ½ x ⅝ in. and larger	4.20c.
Cold-rolled strip, soft and quarter hard	7.00c.
Open-hearth spring steel	4.50c. to 7.00c.
Shafting and Screw Stock:	
Rounds	4.05c.
Square, flats and hex.	4.55c.
Standard tool steel, base price	15.00c.
Extra tool steel	18.00c.
Special tool steel	23.00c.
High-speed steel, 18 per cent tungsten	70c.

Sheets

Blue Annealed

	Per Lb.
No. 10	3.89c.
No. 12	3.94c.
No. 14	3.99c.
No. 16	4.09c.

Box Annealed—Black

	Soft Steel C. R. One Pass Per Lb.	Blued Stove Pipe Sheet Per Lb.
Nos. 18 to 20	4.30c. to 4.45c.	.....
Nos. 22 and 24	4.45c. to 4.60c.	5.10c.
No. 26	4.50c. to 4.65c.	5.15c.
No. 28*	4.60c. to 4.75c.	5.25c.
No. 30	4.70c. to 4.95c.	.....

Galvanized

	Per Lb.
No. 14	4.70c. to 4.85c.
No. 16	4.85c. to 5.00c.
Nos. 18 and 20	5.00c. to 5.15c.
Nos. 22 and 24	5.15c. to 5.30c.
No. 26	5.30c. to 5.45c.
No. 28*	5.60c. to 5.75c.
No. 30	6.10c. to 6.25c.

*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

Welded Pipe

Standard Steel	Black	Galv.	*Wrought Iron*	Black	Galv.
½ in. Butt...	—41	—24	½ in. Butt...	— 4	+19
¾ in. Butt...	—46	—32	¾ in. Butt...	—11	+ 9
1-3 in. Butt..	—48	—34	1-1½ in. Butt.	—14	+ 6
2½-6 in. Lap.	—44	—30	2 in. Lap.....	— 5	+14
7-8 in. Lap...	—41	—11	2½-6 in. Lap.	— 9	+ 9
9-12 in. Lap..	—34	— 6	7-12 in. Lap..	— 3	+16

Bolts and Screws

Machine bolts, cut thread, 50 and 10 per cent off list

Carriage bolts, cut thread, 35 to 35 and 10 per cent off list

Coach screws, 45 and 10 per cent off list

Wood screws, flat head iron, 75, 20, 10 and 5 per cent off list

Steel Wire

BASE PRICE* ON NO. 9 GAGE AND COARSER	Per Lb.
Bright, basic	4.25c. to 4.50c.
Annealed soft	4.50c. to 4.75c.
Galvanized annealed	5.15c. to 5.40c.
Coppered basic	5.15c. to 5.40c.
Tinned soft Bessemer	6.15c. to 6.40c.

*Regular extras for lighter gage.

Brass Sheet, Rod, Tube and Wire

BASE PRICE

High brass sheet	18⅛c. to 19⅛c.
High brass wire	18⅝c. to 19⅝c.
Brass rods	16⅛c. to 17⅛c.
Brass tube, brazed	26⅛c. to 27⅛c.
Brass tube, seamless	22½c. to 23½c.
Copper tube, seamless	23¾c. to 24¼c.

Copper Sheets

Sheet copper, hot rolled, 21⅜c. to 22⅜c. per lb. base.

Cold rolled, 14 oz. and heavier, 3c. per lb. advance over hot rolled.

Tin Plates

Bright Tin		Coke—14 x 20		
Grade "AAA" Charcoal 14x20	Grade "A" Charcoal 14x20		Prime	Seconds
		80 lb..	$6.15	$5.90
		90 lb..	6.30	6.05
		100 lb..	6.45	6.20
IC..$11.25	$8.85	IC..	6.65	6.40
IX.. 12.85	10.85	IX..	7.85	7.60
IXX.. 14.40	12.55	IXX..	9.00	8.75
IXXX.. 15.75	13.85	IXXX..	10.35	10.10
IXXXX.. 17.00	15.05	IXXXX..	11.35	11.10

Terne Plates

8 lb. coating, 14 x 20

100 lb.	$7.00 to $8.00
IC	7.25 to 8.25
IX	8.25 to 8.75
Fire door stock	9.00 to 10.00

Tin

Straits, pig	58c.
Bar	62c. to 65c.

Copper

Lake ingot	16½c.
Electrolytic	16 c.
Casting	15 c.

Spelter and Sheet Zinc

Western Spelter	7¾c.
Sheet zinc, No. 9 base, casks	12c. open 12½c.

Lead and Solder*

American pig lead	10c. to 10½c.
Bar lead	13c. to 15c.
Solder, ½ and ½ guaranteed	41c.
No. 1 solder	38c.
Refined solder	32c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade, per lb.	75c. to 90c.
Commercial grade, per lb.	35c. to 50c.
Grade D, per lb.	25c. to 35c.

Antimony

Asiatic	17c. to 18c.

Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb. 36c.

Old Metals

The market is firm and follows new metals closely. Dealers' buying prices are as follows:

	Cents Per Lb.
Copper, heavy crucible	11.75
Copper, heavy wire	11.25
Copper, light bottoms	9.75
Brass, heavy	7.00
Brass, light	5.75
Heavy machine composition	8.75
No. 1 yellow brass turnings	7.75
No. 1 red brass or composition turnings	8.25
Lead, heavy	7.75
Lead, tea	6.00
Zinc	4.00
Cast aluminum	16.00
Sheet aluminum	16.00